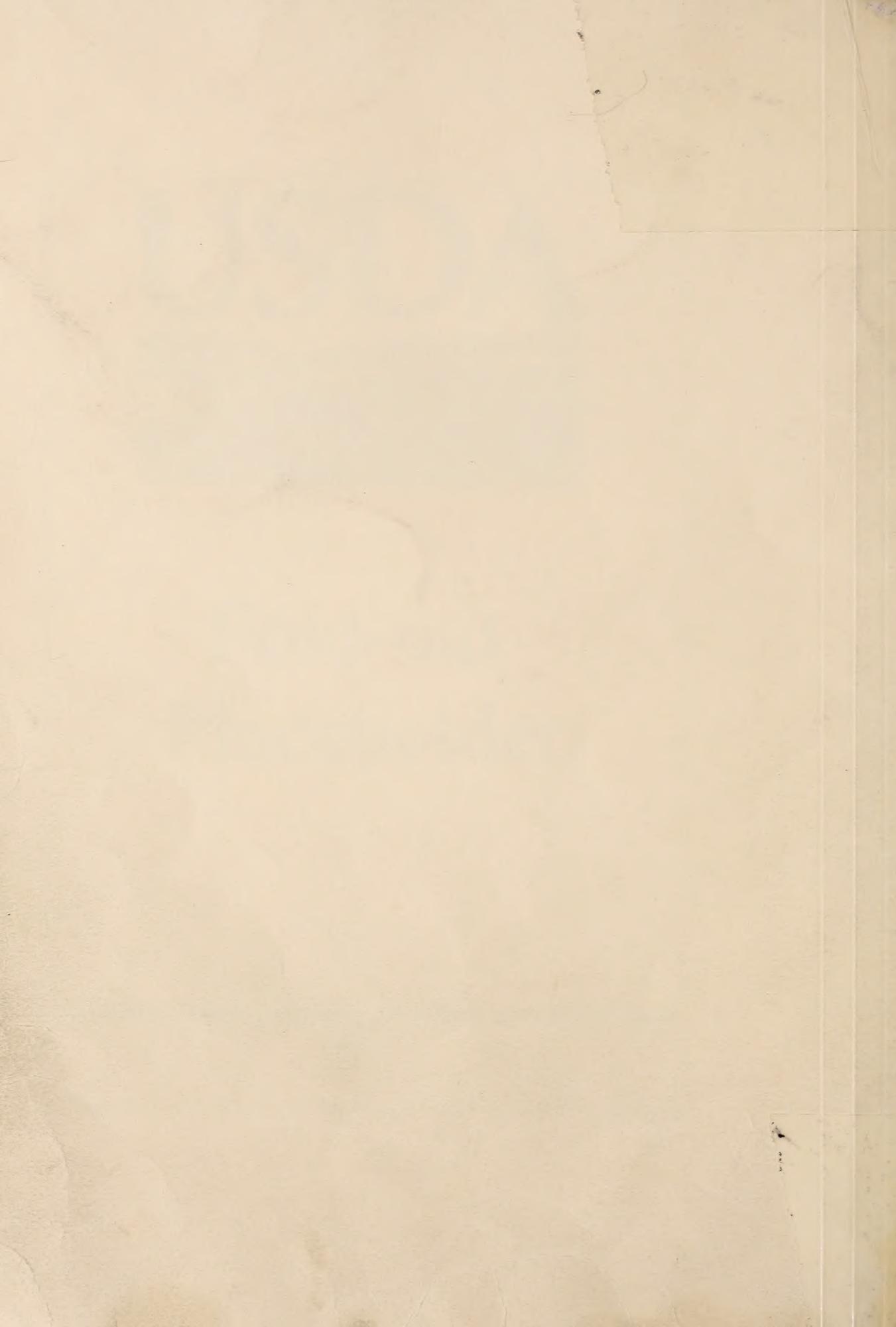


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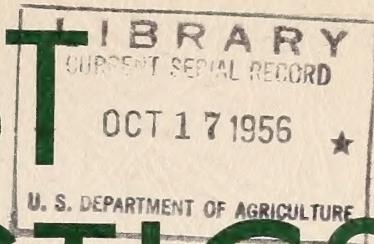


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# FOREST STATISTICS



Central States Forest Experiment Station

Columbus, Ohio

## FOREWORD

This is a preliminary report on the forest areas and timber volumes in Iowa. A second more comprehensive report is being prepared which will contain background material and a brief analysis of the timber situation including figures on timber growth and cut.

These publications are products of the nationwide Forest Survey being made by the Forest Service, U. S. Department of Agriculture. The preliminary planning and a large part of the field work for the survey were done by personnel of the Central States Forest Experiment Station at Columbus, Ohio. The data were analyzed and the report prepared at the Lake States Forest Experiment Station at Saint Paul, Minnesota.

The Forest Survey in Iowa was intensified beyond national standards of accuracy through the cooperation of two state agencies. The State Conservation Commission and the Iowa Agricultural Experiment Station furnished foresters to help in the field inventory, thereby permitting the measurement of double the number of ground plots originally planned. Acknowledgment for this assistance is due to Bruce Stiles, Director of the State Conservation Commission; M. A. Ellerhoff, Superintendent of Forestry; Dr. George Browning, Associate Director of the Iowa Agricultural Experiment Station; and Professor George Hartman, Head of the Department of Forestry.

Complete aerial photo coverage of the State was loaned by the Iowa Agricultural Stabilization Committee at Des Moines.

Field work in Iowa was done during the period November 1953 to August 1954. From initial planning to final compilation these people worked on the inventory:

General Supervision -- R. N. Cunningham, J. T. Morgan

Photo Interpretation -- K. E. Moessner, P. L. Thornton

Field Inventory -- P. L. Thornton, J. D. Burton, A. R. Eschner,  
N. J. Hansen, K. Kuusela, M. J. Peterson,  
W. C. Ritter, D. E. Stoppel

Statistical Computations -- L. F. Compton, C. E. Jensen

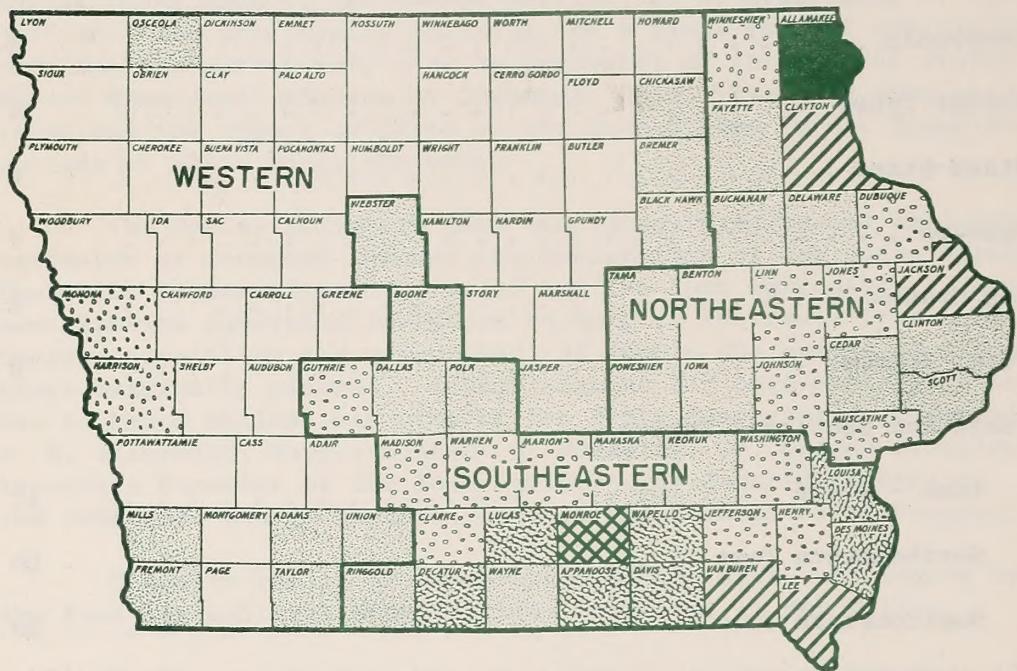
Report -- J. T. Morgan, L. F. Compton

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Central States Forest Experiment Station, U. S. Dept. of Agriculture  
Forest Service, 111 Old Federal Building, Columbus 15, Ohio  
W. G. McGinnies, Director

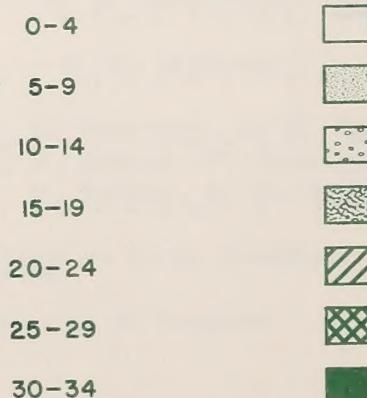
## CONTENTS

|   | <u>Page</u> |
|---|-------------|
| <b>Forest Area . . . . .</b>            | <b>3</b>    |
| <b>Ownership . . . . .</b>              | <b>4</b>    |
| <b>Forest Types . . . . .</b>           | <b>5</b>    |
| <b>Stand-Sizes . . . . .</b>            | <b>6</b>    |
| <b>Species . . . . .</b>                | <b>7</b>    |
| <b>Log Grades . . . . .</b>             | <b>8</b>    |
| <b>Total Volume . . . . .</b>           | <b>9</b>    |
| <b>State and Sectional Tables</b>       |             |
| <b>Iowa - State . . . . .</b>           | <b>10</b>   |
| <b>Northeastern Iowa . . . . .</b>      | <b>20</b>   |
| <b>Southeastern Iowa . . . . .</b>      | <b>30</b>   |
| <b>Western Iowa . . . . .</b>           | <b>40</b>   |
| <b>Appendix</b>                         |             |
| <b>Forest Survey Methods . . . . .</b>  | <b>51</b>   |
| <b>Accuracy of Data . . . . .</b>       | <b>52</b>   |
| <b>Explanation of Terms . . . . .</b>   | <b>53</b>   |
| <b>Principal Tree Species . . . . .</b> | <b>57</b>   |

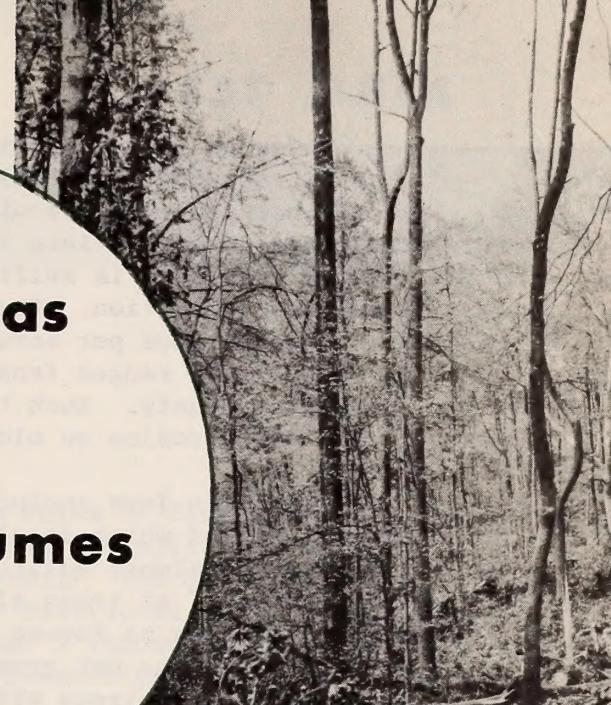
# IOWA



## PERCENT FOREST



Frontispiece.--Forest Survey Regions and percent of forest land by county in Iowa.



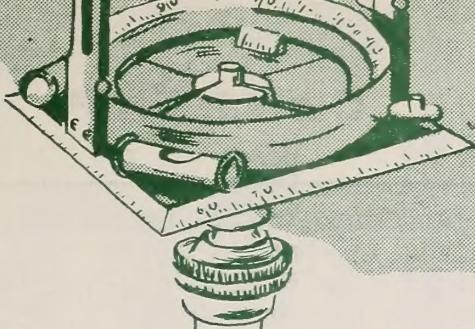
# Forest Areas and Timber Volumes of IOWA

This report contains forest area and timber volume statistics for the State of Iowa. The information presented here was gathered and compiled according to three different geographical units, the divisions being made on the basis of similar forest, soil, and economic conditions (frontispiece). So, for the benefit of those who might find such localized information useful, forest statistics are shown separately for each of these units as well as for the State as a whole.

Northeastern Iowa contains most of the soils that developed under forest cover. In the rugged uplands around McGregor are the remaining stands of northern hardwoods and remnants of the outliers of northern softwood species, such as white pine and balsam fir. Because of its rough topography and generally shallow, rather acid soils, much of the land in this area has remained in forest. The forests occur as typical farm woodlots, which are relegated to the poorer ground, and on the rough breaks and bottomlands bordering streams. Exceptions may be found, particularly on the bluffs along the Mississippi River where there are fairly extensive tracts of continuous forest. The amount of forest land by county ranges from 32 percent in Allamakee County to 4 percent in Benton County, which is well into the area of prairie soils.

Southeastern Iowa includes the remaining soils that developed under forest cover, largely along streams. The soils in this region, partly because they are older, have been more affected by leaching and erosion and are less suited to row crops than the rest of the prairie. Farming is shifting from grain to permanent pasture for livestock production. The forests contain fewer valuable species and lower volumes per acre than the rest of the State. The amount of forest area ranges from 26 percent in Monroe County to 6 percent in Webster County. Much tree planting has been done for windbreaks and to halt erosion on old fields.

Western Iowa includes soils that are mostly of recent glacial origin, all of which developed under prairie vegetation. Forests are confined almost entirely to the watercourses. Much timber exists in "stringers" of trees along small drainages too narrow or small in area to qualify as forest land. On the loess soils of the Missouri River bluffs, bur oak grows in pure stands but consists mostly of small, scattered trees with little timber volume. Bottomland hardwoods -- cottonwood, American elm, and silver maple -- are the predominant species throughout the prairie. Forest area averages 3 percent of total land area, rising as high as 11 percent along the Missouri River where the bur oak forests may be increasing in area.



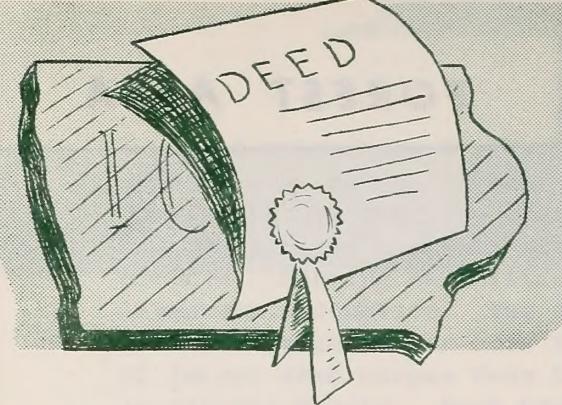
## FOREST AREA

Seven percent of Iowa's 36 million acres of land area is forested. All but 25 thousand acres of this 2.6 million acres of forest is classed as commercial forest land.<sup>1/</sup> The State owns 23 thousand acres on which timber cutting is restricted -- in parks and other recreation areas -- and the other 2 thousand acres of noncommercial forest are in other public ownerships.

Table 1.--Land and forest area by section

| Section   | : Total : |       | Forest area |         |         |
|-----------|-----------|-------|-------------|---------|---------|
|           | : land :  | Total | : Percent   | Commer- | Noncom- |
|           | : area :  |       | : forest    | cial    | mercial |
| Northeast | 7,634     | 852   | 11          | 846     | 6       |
| Southeast | 8,682     | 1,138 | 13          | 1,127   | 11      |
| West      | 19,553    | 630   | 3           | 622     | 8       |
| State     | 35,869    | 2,620 | 7           | 2,595   | 25      |

1/ For a definition of forest land see page 53.

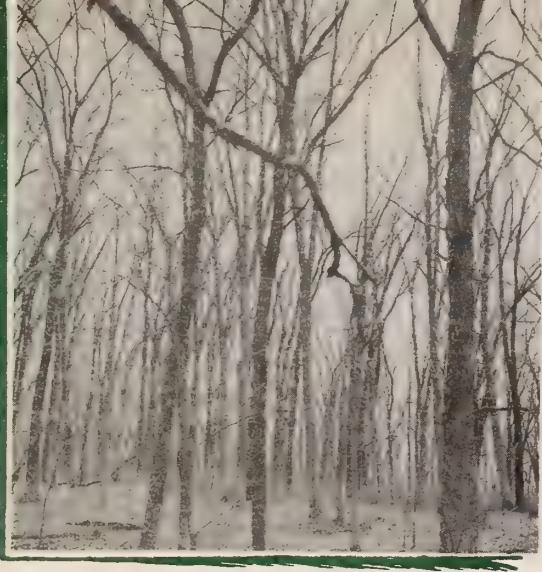


## OWNERSHIP

More than 98 percent of the commercial forest land is privately owned. Farmers own more than 2 million acres -- 88 percent of the total -- and other private owners hold 276 thousand acres for industrial, investment, recreation, and other uses. The State owns 22 thousand acres, largely in state forests, and the federal government owns about 13 thousand acres. Counties and municipalities own hardly any commercial forest land.

Table 2.--Ownership of commercial forest land by section  
(In percent)

| Ownership                   | State | Northeast | Southeast | West    |
|-----------------------------|-------|-----------|-----------|---------|
|                             |       | section   | section   | section |
| Federal                     | 0.5   | 1.1       | 0.4       | --      |
| State, county,<br>municipal | 1.0   | .9        | 1.1       | 0.5     |
| Farm                        | 87.9  | 90.3      | 85.6      | 88.9    |
| Other private               | 10.6  | 7.7       | 12.9      | 10.6    |
| All owners                  | 100.0 | 100.0     | 100.0     | 100.0   |



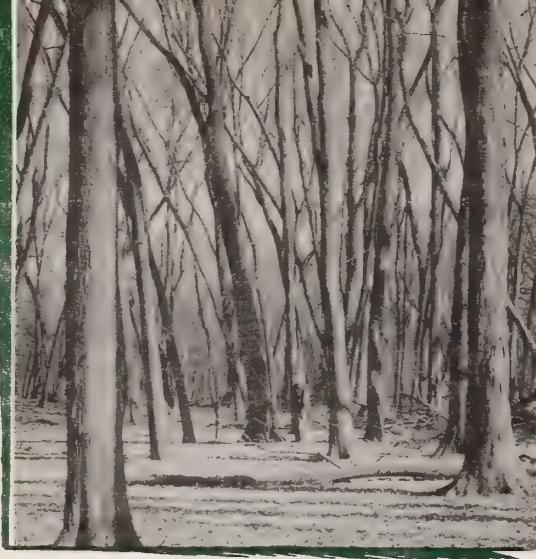
## FOREST TYPES

boxelder, and other bottomland species. The oak-hickory type (above) includes other upland species such as hard maple and basswood.

The bur oak type, found both on bottomland sites and on the drier "islands" in the wet prairie, occupies 8 percent of the forested area. This type is more common in western Iowa where it occurs on rough land and comprises 21 percent of the forest area. The maple-birch or northern hardwood type is insignificant in area except in the northeast where it occupies 8 percent of the forest land. This type contains some of the best species, such as northern red oak and basswood. The hardwood-redcedar type, including pure stands of eastern redcedar on dry sites, occurs throughout the State and is considered a sub-type of oak-hickory. Aspen-birch is a very minor type in Iowa, confined almost entirely to the northeastern part of the State.

Table 3.--Forest area by forest types and section  
(In percent)

| Forest type           | State | Northeast | Southeast | West    |
|-----------------------|-------|-----------|-----------|---------|
|                       |       | section   | section   | section |
| Oak types             | 49    | 49        | 55        | 39      |
| Elm-ash-cottonwood    | 47    | 41        | 45        | 59      |
| Maple-birch and aspen | 4     | 10        | --        | 2       |
| All types             | 100   | 100       | 100       | 100     |



## STAND - SIZES

A little less than 40 percent of the commercial forest area bears sawtimber stands which contain 1,500 or more board-feet per acre of merchantable sawlog material. Three-fourths of this sawtimber acreage is in large sawtimber stands (above), i.e. more than half of the volume is in trees 15 inches or larger in diameter. Poletimber stands occupy 32 percent of the forest area; seedling and sapling stands 11 percent. More than 18 percent (472 thousand acres) is in nonstocked stands, which have little or no volume at present and little prospect for much in the future unless protected from grazing.

Table 4.--Forest area by stand-size classes and section  
(In percent)

| Stand-size class                       | State | Northeast<br>section | Southeast<br>section | West<br>section |
|--|-------|----------------------|----------------------|-----------------|
| Large sawtimber                        | 29    | 37                   | 20                   | 33              |
| Small sawtimber                        | 10    | 16                   | 9                    | 6               |
| Poletimber                             | 32    | 29                   | 35                   | 30              |
| Seedlings & saplings<br>and nonstocked | 29    | 18                   | 36                   | 31              |
| All classes                            | 100   | 100                  | 100                  | 100             |

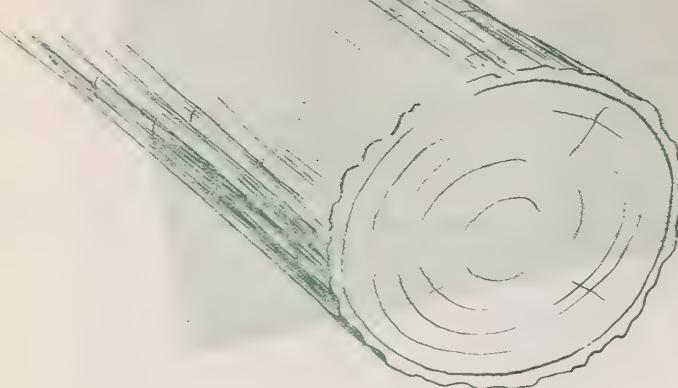


## S P E C I E S

The total sawtimber volume in Iowa is 5.1 billion board-feet. Two-thirds of it is in large sawtimber stands, about one-sixth is in small sawtimber stands, and about one-tenth is in poletimber stands. The sawtimber volume is dispersed among a great variety of species, some much more valuable than others. American elm, a soft hardwood species with few present uses, accounts for 15 percent of the volume. Next is cottonwood, a more favored tree, with 12 percent. The elm-ash-cottonwood type contains 56 percent of all sawtimber volume. Northern red oak and white oak, two of the best hardwood species, each have 10 percent of the volume, and silver maple has 9 percent.

Table 5.--Sawtimber volume, by species and section  
(In percent)

| Species     | State | Northeast | Southeast | West    |
|-------------|-------|-----------|-----------|---------|
|             |       | section   | section   | section |
| Oaks        | 32    | 36        | 38        | 20      |
| Elms        | 21    | 19        | 23        | 23      |
| Cottonwood  | 12    | 8         | 7         | 24      |
| Maple       | 11    | 10        | 12        | 12      |
| Basswood    | 7     | 8         | 5         | 6       |
| Walnut      | 4     | 4         | 4         | 3       |
| Other       | 13    | 15        | 11        | 12      |
| All species | 100   | 100       | 100       | 100     |



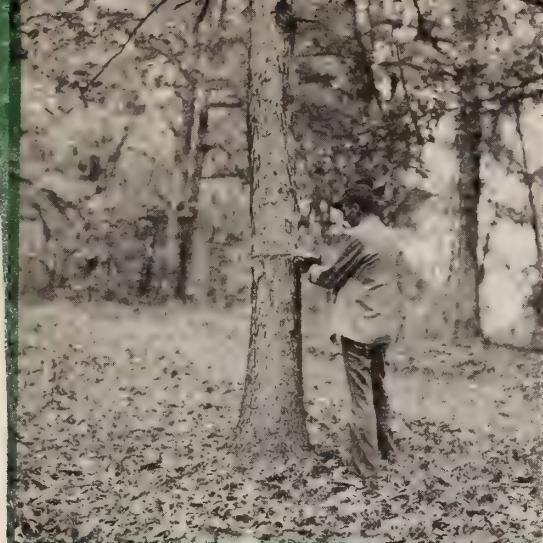
## LOG GRADES

The board-foot volume is well distributed among tree-size classes. Seventy percent is in trees 15 inches or larger in d.b.h., including 40 percent in trees 19 inches and larger. Despite the volume in the larger diameter classes, only 31 percent of the sawlog volume is in grade 1 and 2 logs which provide most of the clear material needed by the hardwood industries. The oaks in general run heavily to low-grade logs. On the other hand, cottonwood, black walnut, and American elm contain more high-grade volume than the average.

Table 6.--Sawtimber volume by log grade and section

(In percent)

| Log grade                      | State | Northeast<br>section | Southeast<br>section | West<br>section |
|--------------------------------|-------|----------------------|----------------------|-----------------|
| No. 1                          | 12    | 8                    | 10                   | 17              |
| No. 2                          | 19    | 16                   | 19                   | 26              |
| No. 3 and tie &<br>timber logs | 69    | 76                   | 71                   | 57              |
| Total                          | 100   | 100                  | 100                  | 100             |



## TOTAL VOLUME

The sawtimber stands average 4,230 board-feet per acre, while the average for all stands is a little less than 2,000 board-feet. With a reasonable degree of management these average volumes could be greatly increased -- probably doubled. Stand composition could benefit by the removal of overmature, poor-quality, and cull trees.

Table 7.--Volume per acre by section

| Class of material                 | : | State | : | Northeast | : | Southeast | : | West    |
|-----------------------------------|---|-------|---|-----------|---|-----------|---|---------|
|                                   | : |       | : | section   | : | section   | : | section |
| Sawtimber<br>(board-feet)         |   |       |   | 1,962     |   | 2,530     |   | 1,441   |
| All growing stock<br>(cubic feet) |   |       |   | 533       |   | 667       |   | 2,135   |
|                                   |   |       |   | 420       |   | 554       |   |         |

The total growing stock volume in Iowa is 1,382 million cubic feet. Seventy-six percent of it is in sawtimber trees; 24 percent is in poletimber trees. The average volume per acre is 533 cubic feet. In addition to the growing stock, there is an average of 233 cubic feet, or about 3 1/2 cords of sound wood in cull trees and the limbs of sawtimber trees per forest acre. The volume of such wood in sawtimber stands averages much higher.

## STATE AND SECTIONAL TABLES

### IOWA - STATE

Table 8.--Forest and nonforest area by county, 1954

| Region       | Total                     |                   | Forest area | Nonforest area    |         |
|--------------|---------------------------|-------------------|-------------|-------------------|---------|
|              | : land area <sup>1/</sup> | :<br>:            |             | :<br>:            | :<br>:  |
|              | Thousand<br>acres         | Thousand<br>acres | Percent     | Thousand<br>acres | Percent |
| Northeastern | 7,634                     | 852               | 11          | 6,782             | 89      |
| Southeastern | 8,682                     | 1,138             | 13          | 7,544             | 87      |
| Western      | 19,553                    | 630               | 3           | 18,923            | 97      |
| State        | 35,869                    | 2,620             | 7           | 33,249            | 93      |

<sup>1/</sup> Source: Area of the United States, 1950. United States Bureau of the Census. Does not include areas listed as inland water.

## IOWA - STATE

Table 9.--Commercial forest area by ownership class, 1954

| Ownership class             | : Commercial forest area <sup>1/</sup> |                |
|-----------------------------|--|----------------|
|                             | <u>Thousand</u><br><u>acres</u>        | <u>Percent</u> |
| <b>Federal:</b>             |  |                |
| National Forest             | 3                                      | 0.1            |
| Indian                      | 1                                      | (2/)           |
| Other                       | 9                                      | .4             |
| <b>Total federal</b>        | <b>13</b>                              | <b>.5</b>      |
| <b>State</b>                | <b>22</b>                              | <b>.9</b>      |
| <b>County and Municipal</b> | <b>2</b>                               | <b>.1</b>      |
| <b>Private:</b>             |  |                |
| Farm                        | 2,282                                  | 87.9           |
| Industrial and other        | 276                                    | 10.6           |
| <b>Total private</b>        | <b>2,558</b>                           | <b>98.5</b>    |
| <b>All ownerships</b>       | <b>2,595</b>                           | <b>100.0</b>   |

1/ Does not include 1,000 acres of forest land in federal ownership, 23,000 acres in State ownership, and 1,000 acres in county and municipal ownership which are reserved from commercial timber use.

2/ Less than 0.05 percent.

## IOWA - STATE

Table 10.--Commercial forest area by forest type and  
stand-size class, 1954  
 (In thousands of acres)

| Forest type        | Total | Large          |             |           | Small     | Pole-    | Seedling |
|--------------------|-------|----------------|-------------|-----------|-----------|----------|----------|
|                    |       | :sawtimber:    | :sawtimber: | :timber:& | & sapling | : stands | : stands |
|                    |       | <u>Percent</u> |             |           | <u>1/</u> |          |          |
| Elm-ash-cottonwood | 1,219 | 47.0           | 444         | 100       | 323       | 352      |          |
| Oak-hickory        | 1,036 | 39.9           | 220         | 131       | 385       | 300      |          |
| Bur oak            | 202   | 7.8            | 30          | 13        | 78        | 81       |          |
| Maple-birch        | 78    | 3.0            | 44          | 19        | 10        | 5        |          |
| Hardwood-redcedar  | 40    | 1.5            | --          | --        | 24        | 16       |          |
| Aspen-birch        | 20    | .8             | --          | 5         | 10        | 5        |          |
| All types          | 2,595 | 100.0          | 738         | 268       | 830       | 759      |          |
| Percent            |       | 100.0          |             | 28.4      | 10.3      | 32.0     | 29.3     |

1/ Includes nonstocked and other areas.

## IOWA - STATE

Table 11.--Sawtimber volume on commercial forest area by species  
and stand-size class, 1954  
 (In million board-feet)

| Species              | Total | Percent   |        |        |                    |                       |
|----------------------|-------|-----------|--------|--------|--------------------|-----------------------|
|                      |       | Large     |        | Small  | Pole-<br>sawtimber | Seedling<br>& sapling |
|                      |       | sawtimber | stands | stands | stands             | stands                |
| Eastern redcedar     | 6     | 0.1       | --     | 1      | 2                  | 3                     |
| Black ash            | 39    | .8        | 34     | 4      | 1                  | --                    |
| American elm         | 742   | 14.6      | 469    | 92     | 99                 | 82                    |
| Slippery elm         | 330   | 6.5       | 239    | 50     | 29                 | 12                    |
| Aspen                | 15    | .3        | 1      | 14     | --                 | --                    |
| Cottonwood           | 601   | 11.8      | 527    | 48     | 19                 | 7                     |
| Basswood             | 342   | 6.7       | 256    | 37     | 25                 | 24                    |
| Silver maple         | 462   | 9.1       | 375    | 73     | 12                 | 2                     |
| Sycamore             | 9     | .2        | 9      | --     | --                 | --                    |
| Boxelder             | 23    | .4        | 11     | 3      | 5                  | 4                     |
| Butternut            | 23    | .4        | 15     | 6      | 1                  | 1                     |
| Black cherry         | 23    | .4        | 10     | 5      | 4                  | 4                     |
| Hackberry            | 29    | .6        | 24     | 4      | 1                  | --                    |
| Willow               | 130   | 2.6       | 36     | 31     | 34                 | 29                    |
| Other soft hardwoods | 11    | .2        | 8      | 2      | 1                  | --                    |
| White oak            | 504   | 9.9       | 253    | 141    | 66                 | 44                    |
| Bur oak              | 360   | 7.1       | 196    | 65     | 59                 | 40                    |
| Other white oaks     | 23    | .4        | 16     | 6      | 1                  | --                    |
| Black oak            | 96    | 1.9       | 33     | 49     | 6                  | 8                     |
| Northern red oak     | 532   | 10.4      | 378    | 108    | 38                 | 8                     |
| Other red oaks       | 135   | 2.7       | 73     | 27     | 17                 | 18                    |
| Hickory              | 155   | 3.0       | 52     | 48     | 39                 | 16                    |
| White ash            | 161   | 3.2       | 116    | 21     | 2                  | 22                    |
| Sugar maple          | 98    | 1.9       | 85     | 9      | 1                  | 3                     |
| River birch          | 37    | .7        | 33     | 1      | 3                  | --                    |
| Black walnut         | 193   | 3.8       | 100    | 61     | 23                 | 9                     |
| Other hard hardwoods | 13    | .3        | 2      | --     | 9                  | 2                     |
| <hr/>                |       |           |        |        |                    |                       |
| All species          | 5,092 | 100.0     | 3,351  | 906    | 497                | 338                   |
| <hr/>                |       |           |        |        |                    |                       |
| Percent              |       | 100.0     | 65.8   | 17.8   | 9.8                | 6.6                   |

1/ Includes the volume on nonstocked and other areas.

Table 12.—Sawtimber volume on commercial forest area by species and tree-diameter class, 1954  
(In million board-feet)

| Species              | Total | Tree-diameter class (inches) |       |       |       |       |     |
|----------------------|-------|------------------------------|-------|-------|-------|-------|-----|
|                      |       | 12-14                        | 16-18 | 20-22 | 24-26 | 28-30 | 32+ |
| Eastern redcedar     | 6     | 1/ 6                         | --    | --    | --    | --    | --  |
| Black ash            | 39    | 11                           | 21    | 7     | --    | --    | --  |
| American elm         | 742   | 182                          | 228   | 158   | 83    | 30    | 61  |
| Slippery elm         | 330   | 103                          | 113   | 61    | 14    | 39    | --  |
| Aspen                | 15    | 11                           | 4     | --    | --    | --    | --  |
| Cottonwood           | 601   | 53                           | 85    | 89    | 110   | 95    | 169 |
| Basswood             | 342   | 99                           | 135   | 76    | 15    | 7     | 10  |
| Silver maple         | 462   | 86                           | 124   | 142   | 61    | 24    | 25  |
| Sycamore             | 9     | --                           | --    | --    | --    | 9     | --  |
| Boxelder             | 23    | 15                           | 6     | --    | 2     | --    | --  |
| Butternut            | 23    | 11                           | 10    | 2     | --    | --    | --  |
| Black cherry         | 23    | 17                           | 6     | --    | --    | --    | --  |
| Hackberry            | 29    | 9                            | 7     | 2     | 4     | 7     | --  |
| Willow               | 130   | 75                           | 38    | 5     | 12    | --    | --  |
| Other soft hardwoods | 11    | 6                            | 5     | --    | --    | --    | --  |
| White oak            | 504   | 198                          | 166   | 85    | 24    | 24    | 7   |
| Bur oak              | 360   | 137                          | 106   | 56    | 37    | 19    | 5   |
| Other white oaks     | 23    | 7                            | 7     | 2     | --    | 7     | --  |
| Black oak            | 96    | 33                           | 33    | 18    | --    | 12    | --  |
| Northern red oak     | 532   | 147                          | 174   | 124   | 54    | 16    | 17  |
| Other red oaks       | 135   | 51                           | 31    | 22    | 23    | --    | 8   |
| Hickory              | 155   | 108                          | 43    | 4     | --    | --    | --  |
| White ash            | 161   | 46                           | 34    | 26    | 8     | 47    | --  |
| Sugar maple          | 98    | 35                           | 26    | 18    | 9     | 10    | --  |
| River birch          | 37    | 6                            | 13    | 7     | 11    | --    | --  |
| Black walnut         | 193   | 85                           | 76    | 23    | 9     | --    | --  |
| Other hard hardwoods | 13    | 3                            | 10    | --    | --    | --    | --  |
| All species          | 5,092 | 1/1,540                      | 1,501 | 927   | 476   | 346   | 302 |
| Percent              | 100.0 | 30.2                         | 29.5  | 18.2  | 9.4   | 6.8   | 5.9 |

1/ Includes 10-inch softwood sawtimber.

## IOWA - STATE

Table 13. --Hardwood sawtimber volume by species group and log grade, 1954

| Species group            | Total<br>volume | Log grade 1               |         | Log grade 2               |         | Log grade 3               |         | Tie and<br>grade          |         |
|--------------------------|-----------------|---------------------------|---------|---------------------------|---------|---------------------------|---------|---------------------------|---------|
|                          |                 | Million<br>board-<br>feet | Percent | Million<br>board-<br>feet | Percent | Million<br>board-<br>feet | Percent | Million<br>board-<br>feet | Percent |
| American elm             | 1,072           | 147                       | 14      | 214                       | 20      | 414                       | 38      | 297                       | 28      |
| Cottonwood               | 601             | 172                       | 29      | 118                       | 19      | 167                       | 28      | 144                       | 24      |
| Silver maple             | 462             | 44                        | 9       | 74                        | 16      | 156                       | 34      | 188                       | 41      |
| White oaks <sup>1/</sup> | 527             | 27                        | 5       | 116                       | 22      | 159                       | 30      | 225                       | 43      |
| Bur oak                  | 360             | --                        | --      | 78                        | 22      | 51                        | 14      | 231                       | 64      |
| Red oaks                 | 763             | 25                        | 3       | 86                        | 11      | 289                       | 38      | 363                       | 48      |
| Hickory                  | 155             | --                        | --      | 8                         | 5       | 75                        | 49      | 72                        | 46      |
| Black walnut             | 193             | 32                        | 17      | 53                        | 27      | 97                        | 50      | 11                        | 6       |
| Other hardwoods          | 953             | 137                       | 14      | 234                       | 25      | 317                       | 33      | 265                       | 28      |

All hardwoods

5,086 584 12 981 19 1,725 34 1,796 35

<sup>1/</sup> Includes all white oaks except bur oak.

## IOWA - STATE

Table 14.--Total cubic volume of sound material on commercial forest area by species and class of material, 1954  
 (In million cubic feet)

| Species              | :        |         | Growing stock    |        |                            | Other material |                             |                       |
|----------------------|----------|---------|------------------|--------|----------------------------|----------------|-----------------------------|-----------------------|
|                      | Total    | sound   | :Sawtimber trees |        | Pole-<br>material          | :Cull          |                             | Hardwood              |
|                      | material | portion | Total            | Sawlog | Upper<br>stem <sup>1</sup> | tim-<br>ber    | Total<br>trees <sup>2</sup> | limbs<br><sup>3</sup> |
| Eastern redcedar     | 3.8      | 3.8     | 1.0              | 0.2    | 2.6                        | --             | --                          | --                    |
| Black ash            | 13.1     | 11.4    | 6.4              | 1.4    | 3.6                        | 1.7            | 0.6                         | 1.1                   |
| American elm         | 321.9    | 206.6   | 115.1            | 45.4   | 46.1                       | 115.3          | 45.1                        | 70.2                  |
| Slippery elm         | 125.7    | 88.2    | 51.0             | 16.3   | 20.9                       | 37.5           | 16.5                        | 21.0                  |
| Aspen                | 17.2     | 15.0    | 2.7              | .6     | 11.7                       | 2.2            | 1.7                         | .5                    |
| Cottonwood           | 154.1    | 120.4   | 92.2             | 23.3   | 4.9                        | 33.7           | 2.9                         | 30.8                  |
| Basswood             | 111.3    | 83.0    | 55.0             | 15.6   | 12.4                       | 28.3           | 12.6                        | 15.7                  |
| Silver maple         | 183.7    | 113.9   | 71.0             | 21.1   | 21.8                       | 69.8           | 36.3                        | 33.5                  |
| Sycamore             | 2.2      | 1.7     | 1.4              | .3     | (4/)                       | .5             | --                          | .5                    |
| Hackberry            | 13.6     | 9.9     | 4.4              | 1.5    | 4.0                        | 3.7            | 2.2                         | 1.5                   |
| Willow               | 90.0     | 61.9    | 22.6             | 8.2    | 31.1                       | 28.1           | 18.4                        | 9.7                   |
| Other soft hardwoods | 60.7     | 25.6    | 12.8             | 4.9    | 7.9                        | 35.1           | 24.6                        | 10.5                  |
| White oak            | 167.6    | 132.5   | 76.1             | 24.9   | 31.5                       | 35.1           | 11.5                        | 23.6                  |
| Other white oaks     | 177.6    | 112.2   | 60.0             | 23.3   | 28.9                       | 65.4           | 37.4                        | 28.0                  |
| Northern red oak     | 166.0    | 126.8   | 84.3             | 24.5   | 18.0                       | 39.2           | 13.6                        | 25.6                  |
| Other red oaks       | 98.4     | 65.6    | 36.9             | 12.0   | 16.7                       | 32.8           | 19.5                        | 13.3                  |
| Hickory              | 78.3     | 63.6    | 24.1             | 7.7    | 31.8                       | 14.7           | 9.5                         | 5.2                   |
| White ash            | 60.1     | 45.5    | 25.3             | 8.6    | 11.6                       | 14.6           | 5.4                         | 9.2                   |
| Sugar maple          | 38.8     | 24.9    | 15.1             | 5.0    | 4.8                        | 13.9           | 6.9                         | 7.0                   |
| Black walnut         | 70.7     | 52.8    | 31.6             | 9.7    | 11.5                       | 17.9           | 9.5                         | 8.4                   |
| Other hard hardwoods | 29.2     | 16.7    | 8.1              | 2.5    | 6.1                        | 12.5           | 8.2                         | 4.3                   |
| Noncommercial        | 2.5      | --      | --               | --     | --                         | 2.5            | 2.5                         | --                    |
| All species          | 1,986.5  | 1,382.0 | 797.1            | 257.0  | 327.9                      | 604.5          | 284.9                       | 319.6                 |

1/ Central stem between sawlog merchantable top and a point with a minimum diameter of 4 inches inside bark.

2/ Sound bole volume only.

3/ Limbs of both merchantable and cull hardwood trees of sawtimber size, to a minimum diameter of 4.0 inches inside bark.

4/ Less than 0.05 million cubic feet.

## IOWA - STATE

Table 15.--Cubic volume of growing stock on commercial forest area by species and stand-size class, 1954  
 (In million cubic feet)

| Species              | Total   | Percent   |           |           |          |        |
|----------------------|---------|-----------|-----------|-----------|----------|--------|
|                      |         | Large     | Small     | Pole-     | Seedling |        |
|                      |         | sawtimber | sawtimber | & sapling | stands   | stands |
| Eastern redcedar     | 3.8     | 0.3       | (2/)      | 0.3       | 2.3      | 1.2    |
| Black ash            | 11.4    | .8        | 9.2       | 1.5       | .4       | .3     |
| American elm         | 206.6   | 15.0      | 113.7     | 27.8      | 44.2     | 20.9   |
| Slippery elm         | 88.2    | 6.4       | 52.9      | 13.2      | 18.2     | 3.9    |
| Aspen                | 15.0    | 1.1       | 1.7       | 9.0       | 4.3      | --     |
| Cottonwood           | 120.4   | 8.7       | 100.6     | 13.7      | 3.9      | 2.2    |
| Basswood             | 83.0    | 6.0       | 58.9      | 10.2      | 8.7      | 5.2    |
| Silver maple         | 113.9   | 8.2       | 82.8      | 23.3      | 7.1      | .7     |
| Sycamore             | 1.7     | .1        | 1.7       | --        | --       | --     |
| Hackberry            | 9.9     | .7        | 6.3       | 1.2       | 2.2      | .2     |
| Willow               | 61.9    | 4.5       | 12.0      | 10.4      | 31.9     | 7.6    |
| Other soft hardwoods | 25.6    | 1.9       | 11.3      | 6.2       | 5.2      | 2.9    |
| White oak            | 132.5   | 9.6       | 55.0      | 36.0      | 31.0     | 10.5   |
| Other white oaks     | 112.2   | 8.1       | 48.9      | 21.6      | 31.3     | 10.4   |
| Northern red oak     | 126.8   | 9.2       | 78.0      | 30.3      | 16.6     | 1.9    |
| Other red oaks       | 65.6    | 4.7       | 23.2      | 18.9      | 17.2     | 6.3    |
| Hickory              | 63.6    | 4.6       | 17.5      | 15.2      | 25.1     | 5.8    |
| White ash            | 45.5    | 3.3       | 28.7      | 8.4       | 3.4      | 5.0    |
| Sugar maple          | 24.9    | 1.8       | 19.1      | 4.2       | .9       | .7     |
| Black walnut         | 52.8    | 3.8       | 23.6      | 15.4      | 11.1     | 2.7    |
| Other hard hardwoods | 16.7    | 1.2       | 9.0       | .5        | 6.1      | 1.1    |
| All species          | 1,382.0 | 100.0     | 754.1     | 267.3     | 271.1    | 89.5   |
| Percent              | 100.0   | --        | 54.6      | 19.3      | 19.6     | 6.5    |

1/ Includes the volume on nonstocked and other areas.

2/ Less than 0.05 million cubic feet.

## IOWA - STATE

Table 16.--Cubic volume of growing stock on commercial forest area  
by tree-diameter class and stand-size class, 1954  
 (In million cubic feet)

| Tree-diameter:<br>class<br>(inches) | Stand-size class   |                    |            |                                     | All classes |
|-------------------------------------|--------------------|--------------------|------------|-------------------------------------|-------------|
|                                     | Large<br>sawtimber | Small<br>sawtimber | Poletimber | Seedling<br>& sapling <sup>1/</sup> |             |
| 6                                   | 9.2                | 5.3                | 38.8       | 4.0                                 | 57.3        |
| 8                                   | 20.2               | 19.2               | 54.6       | 5.1                                 | 99.1        |
| 10                                  | 51.0               | 49.0               | 66.4       | 5.4                                 | 171.8       |
| 12                                  | 58.8               | 65.0               | 33.5       | 9.7                                 | 167.0       |
| 14                                  | 65.6               | 65.4               | 29.5       | 16.0                                | 176.5       |
| 16                                  | 104.7              | 29.1               | 16.1       | 14.3                                | 164.2       |
| 18                                  | 103.9              | 19.3               | 11.6       | 6.8                                 | 141.6       |
| 20+                                 | 340.7              | 15.0               | 20.6       | 28.2                                | 404.5       |
| All classes                         | 754.1              | 267.3              | 271.1      | 89.5                                | 1,382.0     |
|                                     |                    |                    |            |                                     | 100.0       |

1/ Includes volume on nonstocked and other areas.

## IOWA - STATE

Table 17.--Average volume per acre by stand-size class, 1954

| Stand-size class                          | Average volume per acre |                          |
|---|-------------------------|--------------------------|
|   | Board-feet              | Cubic feet <sup>1/</sup> |
| Large sawtimber stands                    | 4,541                   | 1,021.8                  |
| Small sawtimber stands                    | 3,377                   | 997.4                    |
| Poletimber stands                         | 600                     | 326.6                    |
| Seedling and sapling stands <sup>2/</sup> | 445                     | 117.9                    |
| All stand-sizes                           | 1,962                   | 532.6                    |

<sup>1/</sup> Growing stock only.<sup>2/</sup> Includes volume on nonstocked and other areas.

## NORTHEASTERN IOWA

Table 18.--Forest and nonforest area by county, 1954

| County       | Total                  | Forest area       | Nonforest area    |         |         |
|--------------|------------------------|-------------------|-------------------|---------|---------|
|              | land area <sup>1</sup> |                   |                   | Percent | Percent |
|              | Thousand<br>acres      | Thousand<br>acres | Thousand<br>acres |         |         |
| Allamakee    | 409                    | 132               | 277               | 32      | 68      |
| Benton       | 460                    | 20                | 440               | 4       | 96      |
| Buchanan     | 364                    | 17                | 347               | 5       | 95      |
| Cedar        | 374                    | 23                | 351               | 6       | 94      |
| Clayton      | 498                    | 120               | 378               | 24      | 76      |
| Clinton      | 445                    | 30                | 415               | 7       | 93      |
| Delaware     | 367                    | 27                | 340               | 7       | 93      |
| Dubuque      | 389                    | 56                | 333               | 14      | 86      |
| Fayette      | 466                    | 38                | 428               | 8       | 92      |
| Iowa         | 374                    | 30                | 344               | 8       | 92      |
| Jackson      | 412                    | 82                | 330               | 20      | 80      |
| Johnson      | 397                    | 41                | 356               | 10      | 90      |
| Jones        | 374                    | 42                | 332               | 11      | 89      |
| Linn         | 456                    | 46                | 410               | 10      | 90      |
| Muscatine    | 281                    | 30                | 251               | 11      | 89      |
| Poweshiek    | 377                    | 17                | 360               | 5       | 95      |
| Scott        | 290                    | 15                | 275               | 5       | 95      |
| Tama         | 461                    | 30                | 431               | 7       | 93      |
| Winneshiek   | 440                    | 56                | 384               | 13      | 87      |
| All counties | 7,634                  | 852               | 6,782             | 11      | 89      |

<sup>1</sup> Source: Area of the United States, 1950. U. S. Bureau of the Census. Does not include areas listed as inland water.

## NORTHEASTERN IOWA

Table 19.--Commercial forest area by ownership class, 1954

| Ownership class             | Commercial forest area <sup>1/</sup> |              |
|-----------------------------|--------------------------------------|--------------|
|                             | Thousand<br>acres                    | Percent      |
| <b>Federal:</b>             |                                      |              |
| National forest             | --                                   | --           |
| Indian                      | 1                                    | 0.1          |
| Other                       | 8                                    | 1.0          |
| <b>Total federal</b>        | <b>9</b>                             | <b>1.1</b>   |
| <b>State</b>                | <b>7</b>                             | <b>.8</b>    |
| <b>County and Municipal</b> | <b>1</b>                             | <b>.1</b>    |
| <b>Private:</b>             |                                      |              |
| Farm                        | 764                                  | 90.3         |
| Industrial and other        | 65                                   | 7.7          |
| <b>Total private</b>        | <b>829</b>                           | <b>98.0</b>  |
| <b>All ownerships</b>       | <b>846</b>                           | <b>100.0</b> |

<sup>1/</sup> Does not include 1,000 acres of forest land in federal ownership and 5,000 acres in State ownership which are reserved from commercial timber use.

## NORTHEASTERN IOWA

Table 20.--Commercial forest area by forest type and  
stand-size class, 1954  
 (In thousands of acres)

| Forest type        | : | Total | Percent  |          |                      |            | Seedling stands <sup>1/</sup> |
|--------------------|---|-------|----------|----------|----------------------|------------|-------------------------------|
|                    |   |       | : Large  | : Small  | : Pole-<br>sawtimber | :& sapling |                               |
|                    |   |       | : stands | : stands | : stands             | : stands   |                               |
| Elm-ash-cottonwood |   | 346   | 40.9     | 168      | 22                   | 83         | 73                            |
| Oak-hickory        |   | 364   | 43.0     | 105      | 87                   | 121        | 51                            |
| Bur oak            |   | 36    | 4.3      | 2        | 2                    | 15         | 17                            |
| Maple-birch        |   | 66    | 7.8      | 34       | 17                   | 10         | 5                             |
| Hardwood-redcedar  |   | 19    | 2.2      | --       | --                   | 9          | 10                            |
| Aspen-birch        |   | 15    | 1.8      | --       | 5                    | 10         | --                            |
| All types          |   | 846   | 100.0    | 309      | 133                  | 248        | 156                           |
| Percent            |   |       | 100.0    | 36.5     | 15.8                 | 29.3       | 18.4                          |

1/ Includes nonstocked and other areas.

## NORTHEASTERN IOWA

Table 21.--Sawtimber volume on commercial forest area by species  
and stand-size class, 1954  
 (In million board-feet)

| Species              | Total | Percent   |           |          |          |        |                     |
|----------------------|-------|-----------|-----------|----------|----------|--------|---------------------|
|                      |       | Large     | Small     | Pole-    | Seedling |        |                     |
|                      |       | sawtimber | sawtimber | timber:& | sapling  | stands | stands <sup>1</sup> |
|                      |       |           |           |          |          |        |                     |
| Eastern redcedar     | 3     | 0.1       | --        | 1        | --       |        | 2                   |
| Black ash            | 28    | 1.3       | 23        | 4        | 1        | --     | --                  |
| American elm         | 252   | 11.8      | 172       | 44       | 29       |        | 7                   |
| Slippery elm         | 144   | 6.7       | 122       | 18       | 3        |        | 1                   |
| Aspen                | 15    | .7        | 1         | 14       | --       |        | --                  |
| Cottonwood           | 166   | 7.8       | 156       | 4        | 6        |        | --                  |
| Basswood             | 181   | 8.5       | 129       | 31       | 20       |        | 1                   |
| Silver maple         | 145   | 6.8       | 134       | 2        | 9        |        | --                  |
| Sycamore             | 9     | .4        | 9         | --       | --       |        | --                  |
| Boxelder             | 11    | .5        | 7         | 1        | 3        |        | --                  |
| Butternut            | 22    | 1.0       | 15        | 6        | 2        |        | 1                   |
| Black cherry         | 18    | .8        | 8         | 5        | 3        |        | 2                   |
| Hackberry            | 8     | .4        | 6         | 2        | --       |        | --                  |
| Willow               | 42    | 2.0       | 13        | --       | 7        |        | 22                  |
| Other soft hardwoods | 1     | .1        | --        | --       | 1        |        | --                  |
| White oak            | 219   | 10.2      | 105       | 76       | 32       |        | 6                   |
| Bur oak              | 79    | 3.7       | 36        | 19       | 11       |        | 13                  |
| Other white oaks     | 11    | .5        | 11        | --       | --       |        | --                  |
| Black oak            | 75    | 3.5       | 23        | 48       | 4        |        | --                  |
| Northern red oak     | 290   | 13.6      | 192       | 73       | 17       |        | 8                   |
| Other red oaks       | 96    | 4.5       | 60        | 19       | 11       |        | 6                   |
| Hickory              | 79    | 3.7       | 21        | 26       | 19       |        | 13                  |
| White ash            | 68    | 3.2       | 55        | 3        | 2        |        | 8                   |
| Sugar maple          | 71    | 3.3       | 64        | 7        | 2        |        | --                  |
| River birch          | 16    | .7        | 14        | --       | 2        |        | --                  |
| Black walnut         | 86    | 4.0       | 36        | 35       | 12       |        | 3                   |
| Other hard hardwoods | 5     | .2        | --        | --       | 5        |        | --                  |
| All species          |       | 2,140     | 100.0     | 1,412    | 438      | 197    | 93                  |
| Percent              |       |           |           | 66.0     | 20.5     | 9.2    | 4.3                 |

1/ Includes the volume on nonstocked and other areas.

2/ Less than 0.5 million board-feet.

Table 22.--Sawtimber volume on commercial forest area by species and tree-diameter class, 1954  
(In million board-feet)

| Species              | Total | Tree-diameter class (inches) |      |      |       |       |       | 32+ |
|----------------------|-------|------------------------------|------|------|-------|-------|-------|-----|
|                      |       | 1/3                          | 7    | 14   | 16-18 | 20-22 | 24-26 |     |
| Eastern redcedar     | 3     | --                           | --   | --   | --    | --    | --    | --  |
| Black ash            | 28    | 7                            | 14   | 7    | --    | --    | --    | --  |
| American elm         | 252   | 69                           | 82   | 50   | 26    | --    | --    | 25  |
| Slippery elm         | 144   | 40                           | 42   | 32   | 12    | 18    | --    | --  |
| Aspen                | 15    | 11                           | 4    | --   | --    | --    | --    | --  |
| Cottonwood           | 166   | 7                            | 26   | 16   | 33    | 54    | 30    |     |
| Basswood             | 181   | 62                           | 64   | 40   | 5     | --    | 10    |     |
| Silver maple         | 145   | 13                           | 40   | 26   | 31    | 10    | 25    |     |
| Sycamore             | 9     | --                           | --   | --   | --    | 9     | --    |     |
| Boxelder             | 11    | 7                            | 4    | --   | --    | --    | --    |     |
| Butternut            | 22    | 10                           | 10   | 2    | --    | --    | --    |     |
| Black cherry         | 18    | 14                           | 4    | --   | --    | --    | --    |     |
| Hackberry            | 8     | 6                            | 2    | --   | --    | --    | --    |     |
| Willow               | 42    | 24                           | 10   | --   | 8     | --    | --    |     |
| Other soft hardwoods | 1     | 1                            | --   | --   | --    | --    | --    |     |
| White oak            | 219   | 102                          | 77   | 25   | 11    | 4     | --    |     |
| Bur oak              | 79    | 33                           | 21   | 18   | 5     | 2     | --    |     |
| Other white oaks     | 11    | 2                            | 2    | --   | --    | 7     | --    |     |
| Black oak            | 75    | 31                           | 30   | 14   | --    | --    | --    |     |
| Northern red oak     | 290   | 87                           | 97   | 74   | 21    | 11    | --    |     |
| Other red oaks       | 96    | 40                           | 27   | 19   | 2     | --    | 8     |     |
| Hickory              | 79    | 54                           | 25   | --   | --    | --    | --    |     |
| White ash            | 68    | 21                           | 15   | 5    | --    | 27    | --    |     |
| Sugar maple          | 71    | 28                           | 15   | 12   | 6     | 10    | --    |     |
| River birch          | 16    | 1                            | 5    | 2    | 8     | --    | --    |     |
| Black walnut         | 86    | 44                           | 28   | 9    | 5     | --    | --    |     |
| Other hard hardwoods | 5     | --                           | 5    | --   | --    | --    | --    |     |
| All species          | 2,140 | 1/717                        | 649  | 351  | 173   | 152   | 98    |     |
| Percent              | 100.0 | 33.5                         | 30.3 | 16.4 | 8.1   | 7.1   | 4.6   |     |

1/ Includes 10-inch softwood sawtimber.

## NORTHEASTERN IOWA

Table 23. --Hardwood sawtimber volume by species group and log grade, 1954

| Species group           | Total<br>volume | Log grade 1               |                    | Log grade 2               |                    | Log grade 3               |                    | Tie and<br>timber<br>grade |                    |
|-------------------------|-----------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|----------------------------|--------------------|
|                         |                 | Million<br>board-<br>feet | Million<br>Percent | Million<br>board-<br>feet | Million<br>Percent | Million<br>board-<br>feet | Million<br>Percent | Million<br>board-<br>feet  | Million<br>Percent |
| American elm            | 396             | 40                        | 10                 | 67                        | 17                 | 176                       | 44                 | 113                        | 29                 |
| Cottonwood              | 166             | 32                        | 19                 | 15                        | 9                  | 63                        | 38                 | 56                         | 34                 |
| Silver maple            | 145             | 21                        | 15                 | 22                        | 15                 | 74                        | 51                 | 28                         | 19                 |
| White oaks <sup>1</sup> | 230             | 8                         | 4                  | 53                        | 23                 | 60                        | 26                 | 109                        | 47                 |
| Bur oak                 | 79              | --                        | --                 | 13                        | 16                 | 18                        | 23                 | 48                         | 61                 |
| Red oaks                | 461             | 3                         | 1                  | 42                        | 9                  | 184                       | 40                 | 232                        | 50                 |
| Hickory                 | 79              | --                        | --                 | 4                         | 5                  | 40                        | 51                 | 35                         | 44                 |
| Black walnut            | 86              | 8                         | 9                  | 29                        | 34                 | 41                        | 48                 | 8                          | 9                  |
| Other hardwoods         | 495             | 69                        | 14                 | 94                        | 19                 | 193                       | 39                 | 139                        | 28                 |
| All hardwoods           | 2,137           | 181                       | 8                  | 339                       | 16                 | 849                       | 40                 | 768                        | 36                 |

<sup>1</sup>/ Includes all white oaks except bur oak.

## NORTHEASTERN IOWA

Table 24.--Total cubic volume of sound material on commercial forest area by species and class of material, 1954  
 (In million cubic feet)

| Species              | Total          | Growing stock   |                   |        | Other material |        |       |       |       |
|----------------------|----------------|-----------------|-------------------|--------|----------------|--------|-------|-------|-------|
|                      | sound material | Sawtimber trees | Pole              | Sawlog | Upper          | timber | Total | trees | limbs |
|                      |                | portion         | stem <sup>1</sup> | ber    | 2/             | ber    | 2/    | 3/    |       |
| Eastern redcedar     | 2.1            | 2.1             | 0.5               | 0.1    | 1.5            | --     | --    | --    | --    |
| Black ash            | 9.1            | 7.9             | 4.5               | 1.0    | 2.4            | 1.2    | 0.4   | 0.8   |       |
| American elm         | 101.3          | 70.1            | 39.3              | 14.7   | 16.1           | 31.2   | 10.6  | 20.6  |       |
| Slippery elm         | 44.3           | 34.8            | 22.2              | 6.6    | 6.0            | 9.5    | 2.7   | 6.8   |       |
| Aspen                | 17.0           | 14.8            | 2.7               | .6     | 11.5           | 2.2    | 1.7   | .5    |       |
| Cottonwood           | 42.3           | 32.0            | 25.4              | 6.2    | .4             | 10.3   | 1.5   | 8.8   |       |
| Basswood             | 58.2           | 46.5            | 29.3              | 7.7    | 9.5            | 11.7   | 4.7   | 7.0   |       |
| Silver maple         | 53.5           | 33.4            | 21.9              | 6.0    | 5.5            | 20.1   | 9.0   | 11.1  |       |
| Sycamore             | 2.2            | 1.7             | 1.4               | .3     | (4/)           | .5     | --    | .5    |       |
| Hackberry            | 3.1            | 2.2             | 1.3               | .5     | .4             | .9     | .6    | .3    |       |
| Willow               | 20.2           | 11.7            | 7.2               | 3.1    | 1.4            | 8.5    | 4.7   | 3.8   |       |
| Other soft hardwoods | 28.7           | 16.5            | 8.6               | 3.0    | 4.9            | 12.2   | 7.9   | 4.3   |       |
| White oak            | 71.7           | 57.2            | 33.5              | 10.7   | 13.0           | 14.5   | 4.9   | 9.6   |       |
| Other white oaks     | 42.8           | 27.7            | 14.0              | 5.6    | 8.1            | 15.1   | 7.6   | 7.5   |       |
| Northern red oak     | 90.1           | 69.2            | 46.3              | 12.7   | 10.2           | 20.9   | 7.1   | 13.8  |       |
| Other red oaks       | 58.1           | 42.2            | 27.7              | 8.5    | 6.0            | 15.9   | 7.9   | 8.0   |       |
| Hickory              | 31.6           | 27.9            | 12.4              | 3.8    | 11.7           | 3.7    | 1.3   | 2.4   |       |
| White ash            | 23.1           | 18.2            | 10.8              | 3.1    | 4.3            | 4.9    | 1.5   | 3.4   |       |
| Sugar maple          | 29.5           | 18.2            | 11.0              | 3.6    | 3.6            | 11.3   | 5.9   | 5.4   |       |
| Black walnut         | 30.6           | 22.9            | 14.1              | 4.4    | 4.4            | 7.7    | 4.1   | 3.6   |       |
| Other hard hardwoods | 10.2           | 7.2             | 3.3               | .9     | 3.0            | 3.0    | 1.4   | 1.6   |       |
| Noncommercial        | .5             | --              | --                | --     | --             | .5     | .5    | --    |       |
| All species          | 770.2          | 564.4           | 337.4             | 103.1  | 123.9          | 205.8  | 86.0  | 119.8 |       |

1/ Central stem between sawlog merchantable top and a point with a minimum diameter of 4 inches inside bark.

2/ Sound bole volume only.

3/ Limbs of both merchantable and cull hardwood trees of sawtimber size, to a minimum diameter of 4.0 inches inside bark.

4/ Less than 0.05 million cubic feet.

## NORTHEASTERN IOWA

Table 25.--Cubic volume of growing stock on commercial forest area by species and stand-size class, 1954  
 (In million cubic feet)

| Species              | Total | Percent     |             |          |                                     | Seedling stands <sup>1</sup> |
|----------------------|-------|-------------|-------------|----------|-------------------------------------|------------------------------|
|                      |       | Large       |             | Small    | Pole- & sapling stands <sup>2</sup> |                              |
|                      |       | :sawtimber: | :sawtimber: | :stands: | :stands:                            |                              |
| Eastern redcedar     | 2.1   | 0.4         | (2/)        | 0.1      | 1.0                                 | 1.0                          |
| Black ash            | 7.9   | 1.4         | 6.0         | 1.5      | .4                                  | --                           |
| American elm         | 70.1  | 12.4        | 42.0        | 14.3     | 12.0                                | 1.8                          |
| Slippery elm         | 34.8  | 6.2         | 25.8        | 5.4      | 3.1                                 | .5                           |
| Aspen                | 14.8  | 2.6         | 1.7         | 9.0      | 4.1                                 | --                           |
| Cottonwood           | 32.0  | 5.7         | 29.6        | .8       | 1.2                                 | .4                           |
| Basswood             | 46.5  | 8.2         | 31.0        | 8.9      | 6.4                                 | .2                           |
| Silver maple         | 33.4  | 5.9         | 29.8        | .7       | 2.9                                 | --                           |
| Sycamore             | 1.7   | .3          | 1.7         | --       | --                                  | --                           |
| Hackberry            | 2.2   | .4          | 1.9         | .3       | --                                  | --                           |
| Willow               | 11.7  | 2.1         | 3.5         | --       | 3.0                                 | 5.2                          |
| Other soft hardwoods | 16.5  | 2.9         | 7.9         | 4.3      | 3.2                                 | 1.1                          |
| White oak            | 57.2  | 10.1        | 24.0        | 20.9     | 10.7                                | 1.6                          |
| Other white oaks     | 27.7  | 4.9         | 11.5        | 5.0      | 7.5                                 | 3.7                          |
| Northern red oak     | 69.2  | 12.3        | 39.0        | 22.1     | 6.3                                 | 1.8                          |
| Other red oaks       | 42.2  | 7.5         | 18.4        | 15.8     | 6.7                                 | 1.3                          |
| Hickory              | 27.9  | 4.9         | 6.4         | 7.6      | 10.3                                | 3.6                          |
| White ash            | 18.2  | 3.2         | 13.7        | 1.8      | 1.1                                 | 1.6                          |
| Sugar maple          | 18.2  | 3.2         | 13.8        | 3.6      | .8                                  | --                           |
| Black walnut         | 22.9  | 4.1         | 8.6         | 9.3      | 4.3                                 | .7                           |
| Other hard hardwoods | 7.2   | 1.3         | 3.2         | .2       | 3.7                                 | .1                           |
| All species          | 564.4 | 100.0       | 319.5       | 131.6    | 88.7                                | 24.6                         |
| Percent              | 100.0 | --          | 56.6        | 23.3     | 15.7                                | 4.4                          |

1/ Includes the volume on nonstocked and other areas.

2/ Less than 0.05 million cubic feet.

## NORTHEASTERN IOWA

Table 26.--Cubic volume of growing stock on commercial forest area  
by tree-diameter class and stand-size class, 1954  
 (In million cubic feet)

| Tree-diameter:<br>class<br>(inches) | Stand-size class    |                     |             |                                       |       | All classes<br>Percent |
|-------------------------------------|---------------------|---------------------|-------------|---------------------------------------|-------|------------------------|
|                                     | Large<br>sawtimber: | Small<br>sawtimber: | Poletimber: | Seedling<br>& sapling <sup>1/</sup> : |       |                        |
| 6                                   | 4.8                 | 3.3                 | 9.2         | 0.8                                   | 18.1  | 3.2                    |
| 8                                   | 10.2                | 10.4                | 15.3        | 1.9                                   | 37.8  | 6.7                    |
| 10                                  | 21.8                | 24.8                | 20.2        | 1.4                                   | 68.2  | 12.1                   |
| 12                                  | 27.9                | 31.1                | 13.1        | 3.0                                   | 75.1  | 13.3                   |
| 14                                  | 33.6                | 29.8                | 13.3        | 6.5                                   | 83.2  | 14.7                   |
| 16                                  | 47.8                | 15.6                | 5.9         | 3.4                                   | 72.7  | 12.9                   |
| 18                                  | 42.5                | 8.8                 | 6.1         | .8                                    | 58.2  | 10.3                   |
| 20+                                 | 130.9               | 7.8                 | 5.6         | 6.8                                   | 151.1 | 26.8                   |
| All classes                         | 319.5               | 131.6               | 88.7        | 24.6                                  | 564.4 | 100.0                  |

<sup>1/</sup> Includes volume on nonstocked and other areas.

## NORTHEASTERN IOWA

Table 27.--Average volume per acre by stand-size class, 1954

| Stand-size class                          | Average volume per acre |                          |
|---|-------------------------|--------------------------|
|   | Board-feet              | Cubic feet <sup>1/</sup> |
| Large sawtimber stands                    | 4,570                   | 1,034                    |
| Small sawtimber stands                    | 3,293                   | 990                      |
| Poletimber stands                         | 794                     | 358                      |
| Seedling and sapling stands <sup>2/</sup> | 596                     | 158                      |
| All stand-sizes                           | 2,530                   | 667                      |

<sup>1/</sup> Growing stock only.<sup>2/</sup> Includes volume on nonstocked and other areas.

## SOUTHEASTERN IOWA

Table 28.--Forest and nonforest area by county, 1954

| County       | Total                           | Forest area                     | Nonforest area                  |                |
|--------------|---------------------------------|---------------------------------|---------------------------------|----------------|
|              | land area <sup>1/</sup>         |                                 |                                 |                |
|              | <u>Thousand</u><br><u>acres</u> | <u>Thousand</u><br><u>acres</u> | <u>Thousand</u><br><u>acres</u> | <u>Percent</u> |
| Appanoose    | 335                             | 56                              | 279                             | 17             |
| Boone        | 367                             | 30                              | 337                             | 8              |
| Clarke       | 275                             | 39                              | 236                             | 14             |
| Dallas       | 382                             | 36                              | 346                             | 9              |
| Davis        | 326                             | 51                              | 275                             | 16             |
| Decatur      | 339                             | 57                              | 282                             | 17             |
| Des Moines   | 262                             | 40                              | 222                             | 15             |
| Guthrie      | 381                             | 38                              | 343                             | 10             |
| Henry        | 282                             | 33                              | 246                             | 13             |
| Jefferson    | 279                             | 37                              | 242                             | 13             |
| Keokuk       | 371                             | 35                              | 336                             | 9              |
| Lee          | 334                             | 81                              | 253                             | 24             |
| Louisa       | 258                             | 41                              | 217                             | 16             |
| Lucas        | 278                             | 51                              | 227                             | 18             |
| Madison      | 362                             | 50                              | 312                             | 14             |
| Mahaska      | 366                             | 31                              | 335                             | 8              |
| Marion       | 363                             | 52                              | 311                             | 14             |
| Monroe       | 278                             | 71                              | 207                             | 26             |
| Polk         | 380                             | 32                              | 348                             | 8              |
| Ringgold     | 344                             | 27                              | 317                             | 8              |
| Van Buren    | 312                             | 64                              | 248                             | 21             |
| Wapello      | 280                             | 49                              | 231                             | 18             |
| Warren       | 366                             | 44                              | 322                             | 12             |
| Washington   | 363                             | 37                              | 326                             | 10             |
| Wayne        | 340                             | 27                              | 313                             | 8              |
| Webster      | 459                             | 26                              | 433                             | 6              |
| All counties | 8,682                           | 1,138                           | 7,544                           | 13             |

<sup>1/</sup> Source: Area of the United States, 1950. U. S. Bureau of the Census. Does not include areas listed as inland water.

## SOUTHEASTERN IOWA

Table 29.--Commercial forest area by ownership class, 1954

| Ownership class             | Commercial forest area <sup>1/</sup> |              |
|-----------------------------|--------------------------------------|--------------|
|                             | Thousand<br>acres                    | Percent      |
| <b>Federal:</b>             |                                      |              |
| National Forest             | 3                                    | 0.3          |
| Indian                      | --                                   | --           |
| Other                       | 1                                    | .1           |
| <b>Total federal</b>        | <b>4</b>                             | <b>.4</b>    |
| <b>State</b>                | <b>13</b>                            | <b>1.1</b>   |
| <b>County and Municipal</b> | <b>(2/)</b>                          | <b>(2/)</b>  |
| <b>Private:</b>             |                                      |              |
| Farm                        | 965                                  | 85.6         |
| Industrial and other        | 145                                  | 12.9         |
| <b>Total private</b>        | <b>1,110</b>                         | <b>98.5</b>  |
| <b>All ownerships</b>       | <b>1,127</b>                         | <b>100.0</b> |

1/ Does not include 10,000 acres of forest land in State ownership and 1,000 acres in county and municipal ownership which are reserved from commercial timber use.

2/ Less than 0.5 thousand acres and/or 0.05 percent.

## SOUTHEASTERN IOWA

Table 30.--Commercial forest area by forest type and stand-size class, 1954  
 (In thousands of acres)

| Forest type        | Total | Large        |     |           |     | Small  | Pole-<br>sawtimber | Seedling<br>& sapling |
|--------------------|-------|--------------|-----|-----------|-----|--------|--------------------|-----------------------|
|                    |       | : sawtimber: |     | : stands: |     | stands | stands             | stands                |
|                    |       | Percent      |     |           |     |        |                    |                       |
| Elm-ash-cottonwood | 503   | 44.6         | 120 | 55        | 157 | 171    |                    |                       |
| Oak-hickory        | 567   | 50.3         | 92  | 42        | 219 | 214    |                    |                       |
| Bur oak            | 37    | 3.3          | 7   | 2         | 5   | 23     |                    |                       |
| Maple-birch        | 5     | .5           | 5   | --        | --  | --     |                    |                       |
| Hardwood-redcedar  | 15    | 1.3          | --  | --        | 15  | --     |                    |                       |
| Aspen-birch        | --    | --           | --  | --        | --  | --     |                    |                       |
| All types          | 1,127 | 100.0        | 224 | 99        | 396 | 408    |                    |                       |
| Percent            |       | 100.0        |     | 19.9      | 8.8 | 35.1   |                    | 36.2                  |

1/ Includes the volume on nonstocked and other areas.

## SOUTHEASTERN IOWA

Table 31.--Sawtimber volume on commercial forest area by species  
and stand-size class, 1954  
 (In million board-feet)

| Species              | Total | Large     |           | Small     | Pole-<br>sawtimber | Seedling-<br>& sapling |
|----------------------|-------|-----------|-----------|-----------|--------------------|------------------------|
|                      |       | sawtimber | sawtimber | sawtimber | stands             | stands                 |
|                      |       | stands    | stands    | stands    | stands             | stands                 |
| <u>Percent</u>       |       |           |           |           |                    |                        |
| Eastern redcedar     | 3     | 0.2       | --        | --        | 2                  | 1                      |
| American elm         | 285   | 17.5      | 143       | 32        | 51                 | 59                     |
| Slippery elm         | 92    | 5.7       | 37        | 31        | 18                 | 6                      |
| Cottonwood           | 116   | 7.1       | 84        | 20        | 12                 | --                     |
| Basswood             | 83    | 5.1       | 55        | 2         | 5                  | 21                     |
| Silver maple         | 174   | 10.7      | 100       | 71        | 3                  | --                     |
| Boxelder             | 3     | .2        | 1         | 1         | 1                  | --                     |
| Butternut            | 1     | .1        | --        | --        | 1                  | --                     |
| Black cherry         | 3     | .2        | --        | --        | 1                  | 2                      |
| Hackberry            | 5     | .3        | 2         | 2         | 1                  | --                     |
| Willow               | 63    | 3.9       | 16        | 31        | 13                 | 3                      |
| Other soft hardwoods | 6     | .4        | 4         | 2         | --                 | --                     |
| White oak            | 247   | 15.2      | 117       | 65        | 31                 | 34                     |
| Bur oak              | 126   | 7.8       | 69        | 20        | 20                 | 17                     |
| Other white oaks     | 9     | .6        | 3         | 5         | 1                  | --                     |
| Black oak            | 21    | 1.3       | 10        | 1         | 2                  | 8                      |
| Northern red oak     | 185   | 11.4      | 136       | 35        | 14                 | --                     |
| Other red oaks       | 22    | 1.3       | 11        | --        | 6                  | 5                      |
| Hickory              | 46    | 2.8       | 21        | 13        | 11                 | 1                      |
| White ash            | 33    | 2.0       | 22        | 8         | --                 | 3                      |
| Sugar maple          | 13    | .8        | 12        | --        | 1                  | --                     |
| River birch          | 14    | .9        | 12        | 1         | 1                  | --                     |
| Black walnut         | 67    | 4.1       | 38        | 26        | 2                  | 1                      |
| Other hard hardwoods | 7     | .4        | 2         | --        | 4                  | 1                      |
| <hr/>                |       |           |           |           |                    |                        |
| All species          | 1,624 | 100.0     | 895       | 366       | 201                | 162                    |
| <hr/>                |       |           |           |           |                    |                        |
| Percent              |       | 100.0     | 55.1      | 22.5      | 12.4               | 10.0                   |

1/ Includes the volume on nonstocked and other areas.

2/ Less than 0.5 million board-feet.

Table 32. --Sawtimber volume on commercial forest area by species and tree-diameter class, 1954  
(In million board-feet)

| Species              | Total | Tree-diameter class (inches) |       |       |       |       |     |
|----------------------|-------|------------------------------|-------|-------|-------|-------|-----|
|                      |       | 12-14                        | 16-18 | 20-22 | 24-26 | 28-30 | 32+ |
| Eastern redcedar     | 3     | 1/3                          | --    | --    | --    | --    | --  |
| American elm         | 285   | 68                           | 87    | 65    | 30    | 22    | 13  |
| Slippery elm         | 92    | 36                           | 31    | 16    | 2     | 7     | --  |
| Cottonwood           | 116   | 15                           | 28    | 19    | 12    | 12    | 30  |
| Basswood             | 83    | 20                           | 37    | 16    | 10    | --    | --  |
| Silver maple         | 174   | 60                           | 36    | 34    | 30    | 14    | --  |
| Boxelder             | 3     | --                           | --    | --    | --    | --    | --  |
| Butternut            | 1     | 1                            | --    | --    | --    | --    | --  |
| Black cherry         | 3     | 3                            | --    | --    | --    | --    | --  |
| Hackberry            | 5     | 3                            | 2     | --    | --    | --    | --  |
| Willow               | 63    | 32                           | 22    | 5     | 4     | --    | --  |
| Other soft hardwoods | 6     | 4                            | 2     | --    | --    | --    | --  |
| White oak            | 247   | 87                           | 85    | 35    | 13    | 20    | 7   |
| Bur oak              | 126   | 50                           | 25    | 20    | 9     | 17    | 5   |
| Other white oaks     | 9     | 4                            | 3     | 2     | --    | --    | --  |
| Black oak            | 21    | 2                            | 3     | 4     | --    | 12    | --  |
| Northern red oak     | 185   | 50                           | 55    | 28    | 33    | 5     | 14  |
| Other red oaks       | 22    | 3                            | 2     | 3     | 14    | --    | --  |
| Hickory              | 46    | 33                           | 9     | 4     | --    | --    | --  |
| White ash            | 33    | 8                            | 13    | 4     | --    | 6     | --  |
| Sugar maple          | 13    | 3                            | 4     | 6     | --    | --    | --  |
| River birch          | 14    | 4                            | 4     | 3     | 3     | --    | --  |
| Black walnut         | 67    | 32                           | 29    | 6     | --    | --    | --  |
| Other hard hardwoods | 7     | 2                            | 5     | --    | --    | --    | --  |
| All species          | 1,624 | 1/526                        | 482   | 270   | 162   | 115   | 69  |
| Percent              | 100.0 | 32.4                         | 29.7  | 16.6  | 10.0  | 7.1   | 4.2 |

1/ Includes 10-inch softwood sawtimber.

## SOUTHEASTERN IOWA

Table 33.—Hardwood sawtimber volume by species group and log grade, 1954

| Species group            | Total                     |                    |                           | Log grade 1        |                           |                    | Log grade 2               |                    |                           | Log grade 3        |                           |                    | Tie and<br>timber<br>grade |                    |  |
|--------------------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|----------------------------|--------------------|--|
|                          | Million<br>board-<br>feet | Million<br>Percent | Million<br>board-<br>feet  | Million<br>Percent |  |
| American elm             | 377                       | 57                 | 15                        | 55                 | 15                        | 15                 | 143                       | 38                 | 122                       | 32                 | 9                         | 40                 | 34                         |                    |  |
| Cottonwood               | 116                       | 47                 | 41                        | 19                 | 16                        | 10                 | 10                        | 9                  | 40                        | 34                 |                           |                    |                            |                    |  |
| Silver maple             | 174                       | 8                  | 5                         | 13                 | 7                         | 51                 | 29                        | 102                | 59                        |                    |                           |                    |                            |                    |  |
| White oaks <sup>1/</sup> | 256                       | 12                 | 5                         | 63                 | 24                        | 77                 | 30                        | 104                | 41                        |                    |                           |                    |                            |                    |  |
| Bur oak                  | 126                       | --                 | --                        | 30                 | 24                        | 21                 | 17                        | 75                 | 59                        |                    |                           |                    |                            |                    |  |
| Red oaks                 | 228                       | 15                 | 6                         | 36                 | 16                        | 88                 | 39                        | 89                 | 39                        |                    |                           |                    |                            |                    |  |
| Hickory                  | 46                        | --                 | --                        | 3                  | 7                         | 19                 | 41                        | 24                 | 52                        |                    |                           |                    |                            |                    |  |
| Black walnut             | 67                        | 9                  | 13                        | 12                 | 18                        | 45                 | 67                        | 1                  | 2                         |                    |                           |                    |                            |                    |  |
| Other hardwoods          | 231                       | 24                 | 10                        | 71                 | 31                        | 44                 | 19                        | 92                 | 40                        |                    |                           |                    |                            |                    |  |
| All hardwoods            | 1,621                     | 172                | 10                        | 302                | 19                        | 498                | 31                        | 649                | 40                        |                    |                           |                    |                            |                    |  |

1/ Includes all white oaks except bur oak.

## SOUTHEASTERN IOWA

Table 34.--Total cubic volume of sound material on commercial forest area by species and class of material, 1954  
 (In million cubic feet)

| Species              | Total          | Growing stock   |              |            | Other material |             |          |          |
|----------------------|----------------|-----------------|--------------|------------|----------------|-------------|----------|----------|
|                      | sound material | Sawtimber trees | Pole portion | Cull steml | Hardwood ber   | Total trees | limbs 2/ | limbs 3/ |
| Eastern redcedar     | 1.4            | 1.4             | 0.5          | 0.1        | 0.8            | --          | --       | --       |
| American elm         | 134.7          | 83.5            | 44.1         | 18.2       | 21.2           | 51.2        | 21.5     | 29.7     |
| Slippery elm         | 48.5           | 30.6            | 14.3         | 5.2        | 11.1           | 17.9        | 9.0      | 8.9      |
| Aspen                | .2             | .2              | --           | --         | .2             | --          | --       | --       |
| Cottonwood           | 28.2           | 22.8            | 18.0         | 4.2        | .6             | 5.4         | .5       | 4.9      |
| Basswood             | 28.1           | 18.6            | 13.3         | 4.3        | 1.0            | 9.5         | 4.4      | 5.1      |
| Silver maple         | 68.6           | 48.5            | 27.3         | 7.9        | 13.3           | 20.1        | 10.8     | 9.3      |
| Hackberry            | 4.6            | 3.4             | .7           | .3         | 2.4            | 1.2         | 1.0      | .2       |
| Willow               | 46.6           | 34.9            | 11.0         | 3.5        | 20.4           | 11.7        | 8.2      | 3.5      |
| Other soft hardwoods | 10.0           | 5.0             | 1.8          | .7         | 2.5            | 5.0         | 3.7      | 1.3      |
| White oak            | 81.2           | 63.8            | 36.9         | 12.5       | 14.4           | 17.4        | 5.0      | 12.4     |
| Other white oaks     | 58.0           | 37.3            | 21.3         | 8.1        | 7.9            | 20.7        | 9.9      | 10.8     |
| Northern red oak     | 54.0           | 41.3            | 29.1         | 8.6        | 3.6            | 12.7        | 4.1      | 8.6      |
| Other red oaks       | 31.1           | 17.5            | 6.5          | 2.5        | 8.5            | 13.6        | 9.4      | 4.2      |
| Hickory              | 32.7           | 24.6            | 7.1          | 2.3        | 15.2           | 8.1         | 6.5      | 1.6      |
| White ash            | 13.9           | 9.7             | 5.2          | 2.1        | 2.4            | 4.2         | 1.8      | 2.4      |
| Sugar maple          | 5.1            | 3.7             | 2.0          | .7         | 1.0            | 1.4         | .7       | .7       |
| Black walnut         | 25.4           | 19.5            | 11.2         | 3.2        | 5.1            | 5.9         | 3.1      | 2.8      |
| Other hard hardwoods | 15.3           | 7.0             | 3.6          | 1.2        | 2.2            | 8.3         | 5.9      | 2.4      |
| Noncommercial        | .6             | --              | --           | --         | --             | .6          | .6       | --       |
| All species          | 688.2          | 473.3           | 253.9        | 85.6       | 133.8          | 214.9       | 106.1    | 108.8    |

1/ Central stem between sawlog merchantable top and a point with a minimum diameter of 4 inches inside bark.

2/ Sound bole volume only.

3/ Limbs of both merchantable and cull hardwood trees of sawtimber size, to a minimum diameter of 4.0 inches inside bark.

## SOUTHEASTERN IOWA

Table 35.--Cubic volume of growing stock on commercial forest area by species and stand-size class, 1954  
(In million cubic feet)

| Species              | Total | Large          |        | Small  | Pole-<br>sawtimber | Seedling-<br>& sapling |
|----------------------|-------|----------------|--------|--------|--------------------|------------------------|
|                      |       | stands         | stands | stands | stands             | stands                 |
|                      |       | <u>Percent</u> |        |        |                    |                        |
| Eastern redcedar     | 1.4   | 0.3            | --     | --     | 1.3                | 0.1                    |
| American elm         | 83.5  | 17.6           | 34.8   | 8.2    | 25.7               | 14.8                   |
| Slippery elm         | 30.6  | 6.5            | 9.9    | 7.2    | 11.3               | 2.2                    |
| Aspen                | .2    | (2/)           | --     | --     | .2                 | --                     |
| Cottonwood           | 22.8  | 4.8            | 15.7   | 4.3    | 2.5                | .3                     |
| Basswood             | 18.6  | 3.9            | 12.0   | .5     | 1.5                | 4.6                    |
| Silver maple         | 48.5  | 10.3           | 22.8   | 22.5   | 3.1                | .1                     |
| Hackberry            | 3.4   | .7             | 1.0    | .9     | 1.3                | .2                     |
| Willow               | 34.9  | 7.4            | 6.7    | 10.4   | 16.3               | 1.5                    |
| Other soft hardwoods | 5.0   | 1.1            | 1.0    | 1.7    | 1.5                | .8                     |
| White oak            | 63.8  | 13.5           | 24.9   | 15.1   | 15.7               | 8.1                    |
| Other white oaks     | 37.3  | 7.9            | 15.4   | 7.0    | 10.8               | 4.1                    |
| Northern red oak     | 41.3  | 8.7            | 28.3   | 8.1    | 4.8                | .1                     |
| Other red oaks       | 17.5  | 3.7            | 4.4    | .2     | 9.5                | 3.4                    |
| Hickory              | 24.6  | 5.2            | 7.9    | 3.8    | 11.0               | 1.9                    |
| White ash            | 9.7   | 2.0            | 6.2    | 1.8    | .9                 | .8                     |
| Sugar maple          | 3.7   | .8             | 3.4    | .2     | .1                 | --                     |
| Black walnut         | 19.5  | 4.1            | 9.6    | 6.1    | 3.3                | .5                     |
| Other hard hardwoods | 7.0   | 1.5            | 3.5    | .3     | 2.4                | .8                     |
| <hr/>                |       |                |        |        |                    |                        |
| All species          | 473.3 | 100.0          | 207.5  | 98.3   | 123.2              | 44.3                   |
| <hr/>                |       |                |        |        |                    |                        |
| Percent              | 100.0 | --             | 43.8   | 20.8   | 26.0               | 9.4                    |

1/ Includes the volume on nonstocked and other areas.

2/ Less than 0.05 percent.

## SOUTHEASTERN IOWA

Table 36.--Cubic volume of growing stock on commercial forest area  
by tree-diameter class and stand-size class, 1954  
 (In million cubic feet)

| Tree-diameter:<br>class<br>(inches) | Stand-size class    |                     |            |                                     | All classes | Percent |
|-------------------------------------|---------------------|---------------------|------------|-------------------------------------|-------------|---------|
|                                     | Large<br>sawtimber: | Small<br>sawtimber: | Poletimber | Seedling<br>& sapling <sup>1/</sup> |             |         |
| 6                                   | 2.6                 | 1.4                 | 21.2       | 2.5                                 | 27.7        | 5.8     |
| 8                                   | 5.9                 | 5.9                 | 28.3       | 2.2                                 | 42.3        | 8.9     |
| 10                                  | 18.2                | 12.6                | 29.5       | 3.6                                 | 63.9        | 13.5    |
| 12                                  | 17.1                | 24.6                | 11.8       | 4.0                                 | 57.5        | 12.1    |
| 14                                  | 17.5                | 27.5                | 8.1        | 6.8                                 | 59.9        | 12.7    |
| 16                                  | 29.9                | 10.0                | 7.0        | 5.5                                 | 52.4        | 11.1    |
| 18                                  | 27.2                | 9.6                 | 4.3        | 5.1                                 | 46.2        | 9.8     |
| 20+                                 | 89.1                | 6.7                 | 13.0       | 14.6                                | 123.4       | 26.1    |
| All classes                         | 207.5               | 98.3                | 123.2      | 44.3                                | 473.3       | 100.0   |

1/ Includes volume on nonstocked and other areas.

## SOUTHEASTERN IOWA

Table 37.--Average volume per acre by stand-size class, 1954

| Stand-size class                          | Average volume per acre |                          |
|---|-------------------------|--------------------------|
|   | Board-feet              | Cubic feet <sup>1/</sup> |
| Large sawtimber stands                    | 3,996                   | 926.3                    |
| Small sawtimber stands                    | 3,697                   | 992.9                    |
| Poletimber stands                         | 508                     | 311.1                    |
| Seedling and sapling stands <sup>2/</sup> | 397                     | 108.6                    |
| All stand-sizes                           | 1,441                   | 420.0                    |

<sup>1/</sup> Growing stock only.<sup>2/</sup> Includes the volume on nonstocked and other areas.

## WESTERN IOWA

Table 38.--Forest and nonforest area by county, 1954

| County      | Total                   |    | Forest area    |         | Nonforest area |         |
|-------------|-------------------------|----|----------------|---------|----------------|---------|
|             | land area <sup>1/</sup> | 1/ | Thousand acres | Percent | Thousand acres | Percent |
| Adair       | 364                     |    | 12             | 3       | 352            | 97      |
| Adams       | 273                     |    | 16             | 6       | 257            | 94      |
| Audubon     | 287                     |    | 4              | 1       | 283            | 99      |
| Black Hawk  | 363                     |    | 17             | 5       | 346            | 95      |
| Bremer      | 281                     |    | 15             | 5       | 266            | 95      |
| Buena Vista | 367                     |    | 5              | 1       | 362            | 99      |
| Butler      | 373                     |    | 15             | 4       | 358            | 96      |
| Calhoun     | 366                     |    | 2              | 1       | 364            | 99      |
| Carroll     | 367                     |    | 5              | 1       | 362            | 99      |
| Cass        | 358                     |    | 9              | 3       | 349            | 97      |
| Cerro Gordo | 369                     |    | 4              | 1       | 365            | 99      |
| Cherokee    | 367                     |    | 11             | 3       | 356            | 97      |
| Chickasaw   | 323                     |    | 16             | 5       | 307            | 95      |
| Clay        | 365                     |    | 8              | 2       | 357            | 98      |
| Crawford    | 458                     |    | 14             | 3       | 444            | 97      |
| Dickinson   | 244                     |    | 4              | 2       | 240            | 98      |
| Emmet       | 233                     |    | 4              | 2       | 249            | 98      |
| Floyd       | 322                     |    | 9              | 3       | 313            | 97      |
| Franklin    | 375                     |    | 4              | 1       | 371            | 99      |
| Fremont     | 335                     |    | 31             | 9       | 304            | 91      |
| Greene      | 364                     |    | 12             | 3       | 352            | 97      |
| Grundy      | 321                     |    | 1              | (2/)    | 320            | 100     |
| Hamilton    | 369                     |    | 9              | 2       | 360            | 98      |
| Hancock     | 365                     |    | 3              | 1       | 362            | 99      |
| Hardin      | 367                     |    | 14             | 4       | 353            | 96      |
| Harrison    | 445                     |    | 44             | 10      | 401            | 90      |
| Howard      | 301                     |    | 11             | 4       | 290            | 96      |
| Humboldt    | 278                     |    | 6              | 2       | 272            | 98      |
| Ida         | 276                     |    | 2              | 1       | 274            | 99      |
| Jasper      | 471                     |    | 31             | 7       | 440            | 93      |
| Kossuth     | 627                     |    | 8              | 1       | 619            | 99      |
| Lyon        | 376                     |    | 4              | 1       | 372            | 99      |

## WESTERN IOWA

Table 38.--Forest and nonforest area by county, 1954 (cont'd)

| County        | Total                   | Forest area    |         | Nonforest area |         |
|---------------|-------------------------|----------------|---------|----------------|---------|
|               | land area <sup>1/</sup> | Thousand acres | Percent | Thousand acres | Percent |
| Marshall      | 367                     | 14             | 4       | 353            | 96      |
| Mills         | 285                     | 25             | 9       | 260            | 91      |
| Mitchell      | 299                     | 10             | 3       | 289            | 97      |
| Monona        | 446                     | 48             | 11      | 398            | 89      |
| Montgomery    | 270                     | 10             | 4       | 260            | 96      |
| O'Brien       | 368                     | 4              | 1       | 364            | 99      |
| Osceola       | 255                     | 2              | 8       | 253            | 92      |
| Page          | 342                     | 12             | 4       | 330            | 96      |
| Palo Alto     | 359                     | 6              | 2       | 353            | 98      |
| Plymouth      | 552                     | 12             | 2       | 540            | 98      |
| Pocahontas    | 371                     | 1              | (2/)    | 370            | 100     |
| Pottawattamie | 617                     | 27             | 4       | 590            | 96      |
| Sac           | 370                     | 6              | 2       | 364            | 98      |
| Shelby        | 376                     | 5              | 1       | 371            | 99      |
| Sioux         | 490                     | 3              | 1       | 487            | 99      |
| Story         | 364                     | 13             | 4       | 351            | 96      |
| Taylor        | 338                     | 21             | 6       | 317            | 94      |
| Union         | 273                     | 22             | 8       | 251            | 92      |
| Winnebago     | 257                     | 3              | 1       | 254            | 99      |
| Woodbury      | 558                     | 25             | 4       | 533            | 96      |
| Worth         | 257                     | 5              | 2       | 252            | 98      |
| Wright        | 369                     | 6              | 2       | 363            | 98      |
| All counties  | 19,553                  | 630            | 3       | 18,923         | 97      |

<sup>1/</sup> Source: Area of the United States, 1950. U. S. Bureau of the Census. Does not include areas listed as inland water.

<sup>2/</sup> Less than 0.5 percent.

## WESTERN IOWA

Table 39.--Commercial forest area by ownership class, 1954

| Ownership class             | Commercial forest area <sup>1/</sup> |                |
|-----------------------------|--------------------------------------|----------------|
|                             | <u>Thousand</u><br><u>acres</u>      | <u>Percent</u> |
| <b>Federal:</b>             |                                      |                |
| National Forest             | ---                                  | ---            |
| Indian                      | ---                                  | ---            |
| Other                       | ---                                  | ---            |
| <b>Total federal</b>        | ---                                  | ---            |
| <b>State</b>                | 2                                    | 0.3            |
| <b>County and Municipal</b> | 1                                    | 0.2            |
| <b>Private:</b>             |                                      |                |
| Farm                        | 553                                  | 88.9           |
| Industrial and other        | 66                                   | 10.6           |
| <b>Total private</b>        | 619                                  | 99.5           |
| <b>All ownerships</b>       | 622                                  | 100.0          |

<sup>1/</sup> Does not include 8,000 acres of forest land in State ownership which are reserved from commercial timber use.

## WESTERN IOWA

Table 40.--Commercial forest area by forest type and  
stand-size class, 1954  
 (In thousands of acres)

| Forest type        | : | Total | :           |             |                  |     | Pole-<br>& sapling<br>stands | Seedling<br>stands |
|--------------------|---|-------|-------------|-------------|------------------|-----|------------------------------|--------------------|
|                    |   |       | Large       | Small       | Stand-size class |     |                              |                    |
|                    |   |       | : sawtimber | : sawtimber | : timber         |     |                              |                    |
| <u>Percent</u>     |   |       |             |             |                  |     |                              |                    |
| Elm-ash-cottonwood |   | 370   | 59.5        | 156         | 23               | 83  | 108                          |                    |
| Oak-hickory        |   | 105   | 16.9        | 23          | 2                | 45  | 35                           |                    |
| Bur oak            |   | 129   | 20.7        | 21          | 9                | 58  | 41                           |                    |
| Maple-birch        |   | 7     | 1.1         | 5           | 2                | --  | --                           |                    |
| Hardwood-redcedar  |   | 6     | 1.0         | --          | --               | --  | 6                            |                    |
| Aspen-birch        |   | 5     | .8          | --          | --               | --  | 5                            |                    |
| All types          |   | 622   | 100.0       | 205         | 36               | 186 | 195                          |                    |
| Percent            |   |       | 100.0       |             | 33.0             | 5.8 | 29.9                         | 31.3               |

1/ Includes the volume on nonstocked and other areas.

## WESTERN IOWA

Table 41.--Sawtimber volume on commercial forest area by species  
and stand-size class, 1954  
 (In million board-feet)

| Species              | Total | Percent                      |                              |                           |                                 | Seedling<br>stands <sup>1</sup> |
|----------------------|-------|------------------------------|------------------------------|---------------------------|---------------------------------|---------------------------------|
|                      |       | Large<br>sawtimber<br>stands | Small<br>sawtimber<br>stands | Pole-<br>timber<br>stands | Seedling<br>stands <sup>1</sup> |                                 |
| Black ash            | 11    | 0.8                          | 11                           | --                        | --                              | --                              |
| American elm         | 205   | 15.4                         | 154                          | 16                        | 19                              | 16                              |
| Slippery elm         | 94    | 7.1                          | 80                           | 1                         | 8                               | 5                               |
| Cottonwood           | 319   | 24.0                         | 287                          | 24                        | 1                               | 7                               |
| Basswood             | 78    | 5.9                          | 72                           | 4                         | --                              | 2                               |
| Silver maple         | 143   | 10.8                         | 141                          | --                        | --                              | 2                               |
| Boxelder             | 9     | .7                           | 3                            | 1                         | 1                               | 4                               |
| Black cherry         | 2     | .1                           | 2                            | --                        | --                              | --                              |
| Hackberry            | 16    | 1.2                          | 16                           | --                        | --                              | --                              |
| Willow               | 25    | 1.9                          | 7                            | --                        | 14                              | 4                               |
| Other soft hardwoods | 4     | .3                           | 4                            | --                        | --                              | --                              |
| White oak            | 38    | 2.9                          | 31                           | --                        | 3                               | 4                               |
| Bur oak              | 155   | 11.7                         | 91                           | 26                        | 28                              | 10                              |
| Other white oaks     | 3     | .2                           | 2                            | 1                         | --                              | --                              |
| Northern red oak     | 57    | 4.3                          | 50                           | 2                         | 7                               | --                              |
| Other red oaks       | 17    | 1.3                          | 2                            | 8                         | --                              | 7                               |
| Hickory              | 30    | 2.3                          | 10                           | 9                         | 9                               | 2                               |
| White ash            | 60    | 4.5                          | 39                           | 10                        | --                              | 11                              |
| Sugar maple          | 14    | 1.0                          | 9                            | 2                         | --                              | 3                               |
| River birch          | 7     | .5                           | 7                            | --                        | --                              | --                              |
| Black walnut         | 40    | 3.0                          | 26                           | --                        | 9                               | 5                               |
| Other hard hardwoods | 1     | .1                           | --                           | --                        | --                              | 1                               |
| <hr/>                |       |                              |                              |                           |                                 |                                 |
| All species          | 1,328 | 100.0                        | 1,044                        | 102                       | 99                              | 83                              |
| <hr/>                |       |                              |                              |                           |                                 |                                 |
| Percent              |       | 100.0                        |                              | 78.6                      | 7.7                             | 7.4                             |
|                      |       |                              |                              |                           |                                 | 6.3                             |

1/ Includes the volume on nonstocked and other areas.

2/ Less than 0.5 million board-feet.

Table 42.—Sawtimber volume on commercial forest area by species and tree-diameter class, 1954  
(In million board-feet)

| Species                              | Total | Tree-diameter class (inches) |       |       |       |       |      | 32+ |
|--------------------------------------|-------|------------------------------|-------|-------|-------|-------|------|-----|
|                                      |       | 12-14                        | 16-18 | 20-22 | 24-26 | 28-30 | 32+  |     |
| Black ash                            | 11    | 4                            | 7     | —     | —     | —     | —    | —   |
| American elm                         | 205   | 45                           | 59    | 43    | 27    | 8     | 23   | —   |
| Slippery elm                         | 94    | 27                           | 40    | 13    | —     | 14    | —    | —   |
| Cottonwood                           | 319   | 31                           | 31    | 54    | 65    | 29    | 109  | —   |
| Basswood                             | 78    | 17                           | 34    | 20    | —     | 7     | —    | —   |
| Silver maple                         | 143   | 13                           | 48    | 82    | —     | —     | —    | —   |
| Boxelder                             | 9     | 5                            | 2     | —     | 2     | —     | —    | —   |
| Black cherry                         | 2     | —                            | 2     | —     | —     | —     | —    | —   |
| Hackberry                            | 16    | (1/)                         | 3     | 2     | 4     | 7     | —    | —   |
| Willow                               | 25    | 19                           | 6     | —     | —     | —     | —    | —   |
| Other soft hardwoods                 | 4     | 1                            | 3     | —     | —     | —     | —    | —   |
| White oak                            | 38    | 9                            | 4     | 25    | —     | —     | —    | —   |
| Bur oak                              | 155   | 54                           | 60    | 18    | 23    | —     | —    | —   |
| Other white oaks                     | 3     | 1                            | 2     | —     | —     | —     | —    | —   |
| Northern red oak                     | 57    | 10                           | 22    | 22    | —     | —     | —    | 3   |
| Other red oaks                       | 17    | 8                            | 2     | —     | 7     | —     | —    | —   |
| Hickory                              | 30    | 21                           | 9     | —     | —     | —     | —    | —   |
| White ash                            | 60    | 17                           | 6     | 17    | 6     | 14    | —    | —   |
| Sugar maple                          | 14    | 4                            | 7     | —     | 3     | —     | —    | —   |
| River birch                          | 7     | 1                            | 4     | 2     | —     | —     | —    | —   |
| Black walnut                         | 40    | 9                            | 19    | 8     | 4     | —     | —    | —   |
| Other hard hardwoods                 | 1     | 1                            | —     | —     | —     | —     | —    | —   |
| All species                          | 1,328 | 297                          | 370   | 306   | 141   | 79    | 135  | —   |
| Percent                              | 100.0 | 22.4                         | 27.9  | 23.0  | 10.6  | 5.9   | 10.2 | —   |
| 1/ Less than 0.5 million board-feet. |       |                              |       |       |       |       |      |     |

Table 43.—Hardwood sawtimber volume by species group and log grade, 1954

| Species group           | Total                     |                           | Log grade 1        |                           | Log grade 2        |                           | Log grade 3        |                           | Tie and<br>timber<br>grade |                           |
|-------------------------|---------------------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|----------------------------|---------------------------|
|                         | Million<br>board-<br>feet | Million<br>board-<br>feet | Million<br>Percent | Million<br>board-<br>feet | Million<br>Percent | Million<br>board-<br>feet | Million<br>Percent | Million<br>board-<br>feet | Million<br>Percent         | Million<br>board-<br>feet |
| American elm            | 299                       | 50                        | 16                 | 92                        | 31                 | 95                        | 32                 | 62                        | 21                         |                           |
| Cottonwood              | 319                       | 93                        | 29                 | 84                        | 26                 | 94                        | 30                 | 48                        | 15                         |                           |
| Silver maple            | 143                       | 15                        | 10                 | 39                        | 27                 | 31                        | 22                 | 58                        | 41                         |                           |
| White oaks <sup>1</sup> | 41                        | 7                         | 17                 | --                        | --                 | 22                        | 54                 | 12                        | 29                         |                           |
| Bur oak                 | 155                       | --                        | --                 | 35                        | 22                 | 12                        | 8                  | 108                       | 70                         |                           |
| Red oaks                | 74                        | 7                         | 9                  | 8                         | 11                 | 17                        | 23                 | 42                        | 57                         |                           |
| Hickory                 | 30                        | --                        | --                 | 1                         | 3                  | 16                        | 54                 | 13                        | 43                         |                           |
| Black walnut            | 40                        | 15                        | 38                 | 12                        | 30                 | 11                        | 27                 | 2                         | 5                          |                           |
| Other hardwoods         | 227                       | 44                        | 19                 | 69                        | 31                 | 80                        | 35                 | 34                        | 15                         |                           |
| All hardwoods           | 1,328                     | 231                       | 17                 | 340                       | 26                 | 378                       | 28                 | 379                       | 29                         |                           |

<sup>1</sup>/ Includes all white oaks except bur oak.

## WESTERN IOWA

Table 44.--Total cubic volume of sound material on commercial forest area by species and class of material, 1954  
 (In million cubic feet)

| Species              | Total          | Growing stock |           |      |      | Other material |      |      |    |
|----------------------|----------------|---------------|-----------|------|------|----------------|------|------|----|
|                      | sound material | Total         | Sawtimber | Pole | Cull | Hardwood       |      |      |    |
|                      |                |               | portion   | stem | ber  | limbs          | 2/   | 3/   |    |
| Eastern redcedar     | 0.3            | 0.3           | --        | --   | 0.3  | --             | --   | --   | -- |
| Black ash            | 4.0            | 3.5           | 1.9       | 0.4  | 1.2  | 0.5            | 0.2  | 0.3  |    |
| American elm         | 85.9           | 53.0          | 31.7      | 12.5 | 8.8  | 32.9           | 13.0 | 19.9 |    |
| Slippery elm         | 32.9           | 22.8          | 14.5      | 4.5  | 3.8  | 10.1           | 4.8  | 5.3  |    |
| Cottonwood           | 83.6           | 65.6          | 48.8      | 12.9 | 3.9  | 18.0           | .9   | 17.1 |    |
| Basswood             | 25.0           | 17.9          | 12.4      | 3.6  | 1.9  | 7.1            | 3.5  | 3.6  |    |
| Silver maple         | 61.6           | 32.0          | 21.8      | 7.2  | 3.0  | 29.6           | 16.5 | 13.1 |    |
| Hackberry            | 5.9            | 4.3           | 2.4       | .7   | 1.2  | 1.6            | .6   | 1.0  |    |
| Willow               | 23.2           | 15.3          | 4.4       | 1.6  | 9.3  | 7.9            | 5.5  | 2.4  |    |
| Other soft hardwoods | 22.0           | 4.1           | 2.4       | 1.2  | .5   | 17.9           | 13.0 | 4.9  |    |
| White oak            | 14.7           | 11.5          | 5.7       | 1.7  | 4.1  | 3.2            | 1.6  | 1.6  |    |
| Other white oaks     | 76.8           | 47.2          | 24.7      | 9.6  | 12.9 | 29.6           | 19.9 | 9.7  |    |
| Northern red oak     | 21.9           | 16.3          | 8.9       | 3.2  | 4.2  | 5.6            | 2.4  | 3.2  |    |
| Other red oaks       | 9.2            | 5.9           | 2.7       | 1.0  | 2.2  | 3.3            | 2.2  | 1.1  |    |
| Hickory              | 14.0           | 11.1          | 4.6       | 1.6  | 4.9  | 2.9            | 1.7  | 1.2  |    |
| White ash            | 23.1           | 17.6          | 9.3       | 3.4  | 4.9  | 5.5            | 2.1  | 3.4  |    |
| Sugar maple          | 4.2            | 3.0           | 2.1       | .7   | .2   | 1.2            | .3   | .9   |    |
| Black walnut         | 14.7           | 10.4          | 6.3       | 2.1  | 2.0  | 4.3            | 2.3  | 2.0  |    |
| Other hard hardwoods | 3.7            | 2.5           | 1.2       | .4   | .9   | 1.2            | .9   | .3   |    |
| Noncommercial        | 1.4            | --            | --        | --   | --   | 1.4            | 1.4  | --   |    |
| All species          | 528.1          | 344.3         | 205.8     | 68.3 | 70.2 | 183.8          | 92.8 | 91.0 |    |

1/ Central stem between sawlog merchantable top and a point with a minimum diameter of 4 inches inside bark.

2/ Sound bole volume only.

3/ Limbs of both merchantable and cull hardwood trees of sawtimber size, to a minimum diameter of 4.0 inches inside bark.

## WESTERN IOWA

Table 45.--Cubic volume of growing stock on commercial forest area by species and stand-size class, 1954  
 (In million cubic feet)

| Species              | Total | : Large : Small : Pole- : Seedling           |       |                            |      |      |     |
|----------------------|-------|--|-------|----------------------------|------|------|-----|
|                      |       | : sawtimber : sawtimber : timber : & sapling |       | : stands : stands : stands |      | 1/   |     |
|                      |       | <u>Percent</u>                               |       |                            |      |      |     |
| Eastern redcedar     | 0.3   | 0.1  | --    | 0.2                        | --   | --   | 0.1 |
| Black ash            | 3.5   | 1.0  | 3.2   | --                         | --   | --   | .3  |
| American elm         | 53.0  | 15.4   | 36.9  | 5.3                        | 6.5  | 4.3  |     |
| Slippery elm         | 22.8  | 6.6  | 17.2  | .6                         | 3.8  | 1.2  |     |
| Cottonwood           | 65.6  | 19.1   | 55.3  | 8.6                        | .2   | 1.5  |     |
| Basswood             | 17.9  | 5.2  | 15.9  | .8                         | .8   | .4   |     |
| Silver maple         | 32.0  | 9.3  | 30.2  | .1                         | 1.1  | .6   |     |
| Hackberry            | 4.3   | 1.3  | 3.4   | --                         | .9   | --   |     |
| Willow               | 15.3  | 4.5  | 1.8   | --                         | 12.6 | .9   |     |
| Other soft hardwoods | 4.1   | 1.2  | 2.4   | .2                         | .5   | 1.0  |     |
| White oak            | 11.5  | 3.3  | 6.1   | --                         | 4.6  | .8   |     |
| Other white oaks     | 47.2  | 13.7   | 22.0  | 9.6                        | 13.0 | 2.6  |     |
| Northern red oak     | 16.3  | 4.7  | 10.7  | .1                         | 5.5  | --   |     |
| Other red oaks       | 5.9   | 1.7  | .4    | 2.9                        | 1.0  | 1.6  |     |
| Hickory              | 11.1  | 3.2  | 3.2   | 3.8                        | 3.8  | .3   |     |
| White ash            | 17.6  | 5.1  | 8.8   | 4.8                        | 1.4  | 2.6  |     |
| Sugar maple          | 3.0   | .9   | 1.9   | .4                         | --   | .7   |     |
| Black walnut         | 10.4  | 3.0  | 5.4   | --                         | 3.5  | 1.5  |     |
| Other hardwoods      | 2.5   | .7   | 2.3   | --                         | --   | .2   |     |
| All species          | 344.3 | 100.0  | 227.1 | 37.4                       | 59.2 | 20.6 |     |
| Percent              | 100.0 | --   | 65.9  | 10.9                       | 17.2 | 6.0  |     |

1/ Includes the volume on nonstocked and other areas.

## WESTERN IOWA

Table 46. --Cubic volume of growing stock on commercial forest area  
by tree-diameter class and stand-size class, 1954  
 (In million cubic feet)

| Tree-diameter:<br>class<br>(inches) | Stand-size class   |                    |            |                       | All classes<br>1/ | Percent |
|-------------------------------------|--------------------|--------------------|------------|-----------------------|-------------------|---------|
|                                     | Large<br>sawtimber | Small<br>sawtimber | Poletimber | Seedling<br>& sapling |                   |         |
| 6                                   | 1.8                | 0.6                | 8.4        | 0.7                   | 11.5              | 3.3     |
| 8                                   | 4.1                | 2.9                | 11.0       | 1.0                   | 19.0              | 5.5     |
| 10                                  | 11.0               | 11.6               | 16.7       | .4                    | 39.7              | 11.5    |
| 12                                  | 13.8               | 9.3                | 8.6        | 2.7                   | 34.4              | 10.0    |
| 14                                  | 14.5               | 8.1                | 8.1        | 2.7                   | 33.4              | 9.7     |
| 16                                  | 27.0               | 3.5                | 3.2        | 5.4                   | 39.1              | 11.4    |
| 18                                  | 34.2               | .9                 | 1.2        | .9                    | 37.2              | 10.8    |
| 20+                                 | 120.7              | .5                 | 2.0        | 6.8                   | 130.0             | 37.8    |
| All classes                         | 227.1              | 37.4               | 59.2       | 20.6                  | 344.3             | 100.0   |

1/ Includes volume on nonstocked and other grades.

## WESTERN IOWA

Table 47.--Average volume per acre by stand-size class, 1954

| Stand-size class                          | Average volume per acre |                          |
|---|-------------------------|--------------------------|
|   | Board-feet              | Cubic feet <sup>1/</sup> |
| Large sawtimber stands                    | 5,093                   | 1,107.8                  |
| Small sawtimber stands                    | 2,806                   | 1,038.9                  |
| Poletimber stands                         | 538                     | 318.3                    |
| Seedling and sapling stands <sup>2/</sup> | 426                     | 105.6                    |
| All stand-sizes                           | 2,135                   | 553.5                    |

<sup>1/</sup> Growing stock only.<sup>2/</sup> Includes the volume on nonstocked and other areas.

## FOREST SURVEY METHODS

The inventory of the forest resources of Iowa involved an office study of aerial photographs and a field examination of randomly selected forest and nonforest plots.

The percentage of forest land in each county was obtained by placing a transparent template marked with uniformly spaced dots over aerial photographs and counting the number of dots falling on forest and nonforest areas. The percentage of forest dots in a county, multiplied by the total area gave a preliminary estimate of the forest area. This was later adjusted after field examination indicated the number of plots that had changed since the aerial photos were taken.

A selected number of forest dots were marked on the photographs. The acre surrounding each dot was examined under stereoscope and was classified by stand-size class on the basis of the height, crown width, and number of trees on the plot. Plots to be examined in the field were then randomly drawn. In drawing, greatest weight was given to the stand-size classes containing the largest timber volume. In addition, nonforest plots were selected for field examination to measure the conversion of open land to forest since the photographs were taken.

The selected field plots were marked on the photographs. Field crews located these points on the ground and established 1/5-acre circular plots for which species, size, quality, and growth of trees and other data were recorded.

The following tabulation gives the number of dots and plots examined for each region.

|   | North-<br>eastern<br>Region | South-<br>eastern<br>Region | Western<br>Region |
|---|-----------------------------|-----------------------------|-------------------|
| Number of photo dots counted for<br>forest-area determination             | 58,446                      | 66,074                      | 146,704           |
| Number of plots stereoscopically<br>examined and classified by stand-size | 1,068                       | 1,407                       | 784               |
| Number of forest plots field examined                                     | 262                         | 316                         | 173               |

### ACCURACY OF DATA

Statistical analysis of the commercial forest area and timber volume data shows the following sampling errors<sup>2/</sup> for each region:

| COMMERCIAL FOREST : |                       | GROWING STOCK :    |                       | SAWTIMBER          |                       |
|---------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|
| Area                | : Sampling<br>: error | Volume             | : Sampling<br>: error | Volume             | : Sampling<br>: error |
|                     | Thousand<br>acres     | Million<br>cu. ft. | Percent               | Million<br>bd.-ft. | Percent               |
| Northeastern        | 846                   | 1.8                | 565                   | 5.4                | 2,140                 |
| Southeastern        | 1,127                 | 1.5                | 473                   | 5.7                | 1,624                 |
| Western             | 622                   | 3.1                | 344                   | 8.4                | 1,328                 |
| State               | 2,595                 | 1.1                | 1,382                 | 3.6                | 5,092                 |
|                     |                       |                    |                       |                    | 4.7                   |

The estimates of sampling error do not include errors resulting from mistakes in measurement or judgment. All phases of field and office work were closely supervised to keep such errors to a minimum.

Since the percentage error increases with each subdivision of the total, small acreages or volumes may have large errors and may therefore indicate only relative magnitudes. A rough guide for estimating the sampling errors of various acreages and volumes is given below:

| COMMERCIAL FOREST : |                       | GROWING STOCK :    |                       | SAWTIMBER          |                       |
|---------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|
| Area                | : Sampling<br>: error | Volume             | : Sampling<br>: error | Volume             | : Sampling<br>: error |
|                     | Thousand<br>acres     | Million<br>cu. ft. | Percent               | Million<br>bd.-ft. | Percent               |
|                     | 2,595                 | 1                  | 1,382                 | 4                  | 5,092                 |
|                     | 1,000                 | 2                  | 500                   | 6                  | 1,000                 |
|                     | 500                   | 3                  | 100                   | 13                 | 500                   |
|                     | 100                   | 6                  | 50                    | 19                 | 100                   |
|                     | 50                    | 8                  | 10                    | 43                 | 50                    |
|                     | 10                    | 18                 | 1                     | 135                | 10                    |
|                     |                       |                    |                       |                    | 106                   |

<sup>2/</sup> At one standard deviation; that is, the chances are two out of three that the calculated acreages and volumes do not differ from the totals that would have been obtained by 100 percent measurement by more than the errors shown in the tabulation.

## EXPLANATION OF TERMS

Forest land.--Includes (a) land which is at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which has not been developed for other use; (c) afforested areas.

The minimum area that qualifies as forest land is one acre. Strips of timber must be at least 120 feet wide to qualify. Conversely, clearings, streams, treeless strips and unimproved roads less than one acre in area or less than 120 feet in width within forest areas are classified as forest land. Improved rights-of-way such as graded roads, railroads, or transmission lines are classified as nonforest regardless of width.

Commercial forest land.--Forest land which is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land.--Forest land withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land.

### Forest types

Oak-hickory.--Forests in which 50 percent or more of the stand is upland oaks or hickory, singly or in combination; except where bur oak makes up 50 percent or more of the stand (in which case the stand is classified "bur oak"); and except where redcedar makes up 25 percent or more of the stand (in which case the stand is classified "hardwood-redcedar"). Common associates include elm, maple, and black walnut.

Bur oak.--Forests in which 50 percent or more of the stand is bur oak.

Hardwood-redcedar.--Forests in which 25 percent or more of the stand is redcedar and the remainder is hardwoods, usually oaks.

Maple-birch.--Forests in which 50 percent or more of the stand is hard maple or yellow birch, singly or in combination. Common associates include elm and basswood, and in the Northeastern Region white pine and hemlock.

Elm-ash-cottonwood.--Forests in which 50 percent or more of the stand is elm, ash, or cottonwood, singly or in combination. Common associates include willow, sycamore, and maple.

Aspen-birch.--Forests in which 50 percent or more of the stand is aspen, balsam poplar, or paper birch, singly or in combination.

### Tree classes

Sawtimber tree.--A live softwood (coniferous) tree at least 9.0 inches d.b.h. or live hardwood tree of commercial species at least 11.0 inches d.b.h., with a sound butt log at least 8 feet long, or with at least half of the gross board-foot volume of the tree in sound material.

Poletimber tree.--A live, sound tree of commercial species at least 5.0 inches d.b.h. but less than sawtimber size that gives promise of becoming a sawtimber tree.

Seedling and sapling trees.--Live trees of commercial species less than 5.0 inches in diameter at breast height and of good form and vigor.

Cull tree.--A live tree at least 5.0 inches d.b.h. that does not qualify as a sawtimber or poletimber tree because of species, poor form, limbiness, rot, or other defect.

### Volume estimates

Board-foot volume includes the sound volume of sawlogs in sawtimber trees to a minimum top d.i.b. of 6 inches for softwoods and 8 inches for hardwoods. Volume deductions have been made for rot, crook, and other defects. Board-foot volumes are shown in terms of the International 1/4-inch log rule, which measures the approximate yield of green lumber cut to standard specifications.

### Cubic-foot volume

Total volume includes the sound wood inside bark in both sound and cull living trees 5.0 inches d.b.h. and larger, from the stump to a minimum top diameter of 4.0 inches inside bark. It includes the upper stems of softwood trees and the upper stems and limbs of hardwoods.

Growing stock includes the volume of sound wood inside bark in the stem portion of sawtimber and poletimber trees from stump to a minimum top d.i.b. of 4 inches.

### Stand-size classes

Large sawtimber.--Stands having a net volume of 1,500 or more board-feet per acre in sawtimber trees, and having more than half of this volume in trees 15.0 inches d.b.h. and larger.

Small sawtimber.--Stands having a net volume of 1,500 or more board-feet per acre in sawtimber trees, and having at least half of this volume in trees smaller than 15.0 inches d.b.h.

Poletimber.--Stands failing to meet the sawtimber stand specifications, but at least 10 percent stocked with pole-timber and larger trees and with at least half the minimum stocking in poletimber trees.

Seedlings and saplings.--Stands not qualifying as either sawtimber or poletimber stands but having at least 150 seedlings and saplings of commercial species per acre.

Nonstocked.--Commercial forest land not qualifying for any other class.

### Hardwood log grades

Grade 1.--Butt logs at least 13.0 inches (uppers at least 16 inches) in diameter inside bark with five-sixths of the surface on the three best faces clear of defect in not more than two cuttings, (minimum length of cutting variable, 3-7 feet, depending upon log diameter and position in tree). Minimum log length 10 feet. On the average such logs will yield at least 65 percent No. 1 common and better lumber.

Grade 2.--Logs at least 11 inches in diameter inside bark with two-thirds of the surface on the three best faces clear of defect in not more than three cuttings, (minimum length of cutting, 3 feet). Minimum log length 8 feet. On the average such logs will yield at least 40 percent No. 1 common and better lumber.

Grade 3.--Merchantable logs at least 8.0 inches in diameter inside bark at the small end, 8 feet long with one-half of the surface on the three best faces clear of defect in cuttings 2 feet long. Maximum cull deduction 50 percent. On the average such logs will yield less than 25 percent No. 1 common and better lumber.

Tie and timber.--This class includes the roughest logs considered merchantable. Tie and timber logs must be at least 8 inches in diameter inside bark at the small end and at least 8 feet long. No limit is placed on surface defects as long as they do not extend into the interior enough to affect the strength of the contained tie and timber.

## PRINCIPAL TREE SPECIES<sup>3</sup>

### Softwoods

Eastern redcedar<sup>4</sup>/

- Juniperus virginiana

### Hardwoods

#### Soft hardwoods:

Black ash

- Fraxinus nigra

American elm

- Ulmus americana

Slippery elm

- Ulmus rubra

"Aspen" includes:

Quaking aspen

- Populus tremuloides

Bigtooth aspen

- P. grandidentata

Balsam poplar

- P. balsamifera

Eastern cottonwood

- P. deltoides

American basswood

- Tilia americana

Silver maple

- Acer saccharinum

American sycamore

- Platanus occidentalis

Boxelder<sup>5</sup>/

- Acer negundo

Butternut<sup>5</sup>/

- Juglans cinerea

Black cherry<sup>5</sup>/

- Prunus serotina

Hackberry

- Celtis occidentalis

Willow

- Salix spp.

"Other soft hardwoods" includes paper birch, sassafrass, red maple, and minor commercial low-density species.

#### Hard hardwoods:

White oak

- Quercus alba

Bur oak<sup>6</sup>/

- Q. macrocarpa

"Other white oaks" includes:

Chinkapin oak

- Q. muehlenbergii

Swamp white oak

- Q. bicolor

Post oak

- Q. stellata

<sup>3</sup>/ Source of nomenclature: Check List of the Native and Naturalized Trees of the United States, Agriculture Handbook No. 41, Forest Service, Washington, D. C., 1953.

<sup>4</sup>/ Other native softwoods, such as eastern white pine and eastern hemlock, are not sufficiently common to be commercially important.

<sup>5</sup>/ Combined with "other soft hardwoods" in cubic-foot tables.

<sup>6</sup>/ Combined with "other white oaks" in cubic-foot tables.

|                            |   |                           |
|----------------------------|---|---------------------------|
| Black oak <sup>7/</sup>    | - | <u>Q. velutina</u>        |
| Northern red oak           | - | <u>Q. rubra</u>           |
| "Other red oaks" includes: |   |                           |
| Scarlet oak                | - | <u>Q. coccinea</u>        |
| Pin oak                    | - | <u>Q. palustris</u>       |
| Shingle oak                | - | <u>Q. imbricaria</u>      |
| Blackjack oak              | - | <u>Q. marilandica</u>     |
| Hickory                    | - | <u>Carya</u> spp.         |
| White ash includes:        |   |                           |
| White ash                  | - | <u>Fraxinus americana</u> |
| Blue ash                   | - | <u>F. quadrangulata</u>   |
| Green ash                  | - | <u>F. pennsylvanica</u>   |
| Sugar maple includes:      |   |                           |
| Sugar maple                | - | <u>Acer saccharum</u>     |
| Black maple                | - | <u>A. nigrum</u>          |
| River birch <sup>8/</sup>  | - | <u>Betula nigra</u>       |
| Black walnut               | - | <u>Juglans nigra</u>      |

"Other hard hardwoods" includes yellow birch, rock elm, red mulberry, honeylocust and minor commercial high-density species.

"Noncommercial species" includes American hornbeam, eastern hophornbeam, serviceberry, pin cherry, and others.

<sup>7/</sup> Combined with "other red oaks" in the cubic-foot tables.

<sup>8/</sup> Combined with "other hard hardwoods" in cubic-foot tables.

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